PERFORMANCE / BUILDING / UPGRADING / GAMING

# atomic

MAXIMUM POWER COMPUTING

$6.95 www.atomicmpc.com.au Proudly Australian Issue 33 Oct 03

Free booklet inside:

GEEK GEAR 3 UPGRADE GUIDE

# ATHLON 64 BENCHMARKED

**Flash hardware**
*Hot shot digi-cams*

**Pro-3D vs gamer graphics**
*Quadro & GeForce playoff*

**Hot Box**
*Aluminium anodising guide*

**World Cyber Games**
*Now it's Australia vs the world!*

**Games tech:**
*Aquamark*
*S.T.A.L.K.E.R.*
*XIII*
*Homeworld 2*
*Tron 2.0*

$AUD6.95 Inc. GST
$NZ8.95 Inc. GST
ISSN 1444-8998
33
9 771444 899000

**NO CD?** *Please ask your newsagent nicely*

**WIN:** $4,000 Discreet Pro-3D + Shuttle system + cool toys

16 Years in the making

PS2 Online

8 Player I-Link Compatible

Multiplayer Death Match and Co-Operative Play

scenario profiler

combat camera uplink

They are genetically designed to kill...

They are fanatical, fearless and absolutely dominating...

They are YOUR ENEMY.

# WARHAMMER 40,000 FIRE WARRIOR

**It is the 41st millenium, and there is only WAR....**

THQ

GAMES WORKSHOP

GW GAMES WORKSHOP INTERACTIVE

Kuju

All materials © Copyright Games Workshop Limited 2003 unless otherwise stated . All Rights Reserved. Fire Warrior, the Fire Warrior logo, the GW logo, Games Workshop, the Games Workshop logo, Kais, Space Marine, Space Marine chapter logos, Tau, the Tau caste designations, Warhammer, Warhammer 40,000 Device and all associated races, race insignia, marks, places, characters, illustrations and images from the Fire Warrior game and the Warhammer 40,000 universe are either ®, (tm) and/or © Games Workshop Ltd 2000-2003, variably registered in the UK and other countries around the world, and used under license. All Rights Reserved. "Online play requires internet connection and Network Adaptor for PlayStation 2 (sold separately). The Online icon is a trademark of Sony Computer Entertainment America Inc." GameSpy and the "Powered by GameSpy" design are trademarks of GameSpy Industries, Inc. All rights reserved. The Source Code for the Fire Warrior game © 2003 THQ Inc. THQ and the THQ logo are trademarks and/or registered trademarks of THQ Inc. All Rights Reserved. All other trademarks are the property of their respective owners."

# atomic Contents October 2003 Issue 33



## REGULARS


### NEWS

DNA computing, Halo PC, iStarzone and Jolt! 010
Ground Zero – Life after porn 014
Technica Obscura – RFID for everyone 016
Z-Access – Counter-Strike 2 sucks 018

### GEARBOX 020

Fan grill review. LED monthly. Tech bits in for a look-see.

### HOT BOX 022

When 'Warm Box' just wasn't hot enough.

### REVIEWS 050

Benchmarks 052
Framerate 054
Sony Network Walkman NWMS70D 056
Hercules XPS-2.100 speaker system 056
Emagen Vitesse P4X 058
Shuttle XPC SN45G 058
CMV CT-722A multimedia TFT 060
Billion 743GE ADSL router 060
ABIT Siluro FX5900 OTES 062
Hercules RADEON 9600 256MB 063
NVIDIA Quadro FX3000 064
Tyan Tachyon G9600 PRO 066
Philips 150P4cs LCD Monitor 066

### GAMES

Scanner 070
Engine room 072
Homeworld 2 074
TRON 2.0 076
Live for Speed 078
Lionheart: Legacy of the Crusader 080
Knights of the Old Republic 082

### I/O 084

The Dan treats another case of The Problems.

### MODJITSU: Anodise this! 088

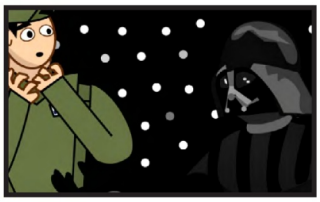
Aluminium's cool, but it's cooler when it's blue. Or green.

### PHR33X TW33X 087

Get your share of the tweakage from Simon Peppercorn.

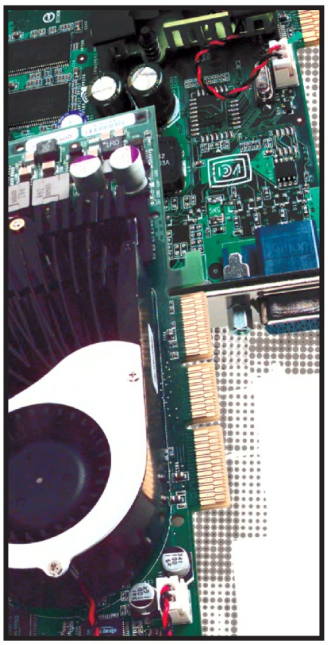
### FALLOUT 098

Something on your mind? It's probably a toasty topper.

## HEAD TO HEAD: QUADRO VS GF 028

Why pit one GPU manufacturer against the other, when it's just as fun to throw two chips from the same place together? Watch as Ivon Smith acts as referee between NVIDIA's Quadro FX3000 and GeForce FX5900.

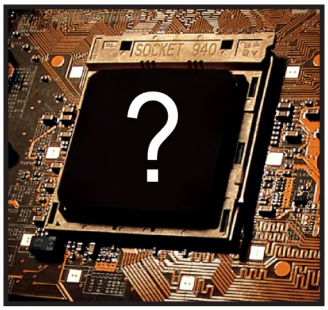


## X-RAY: VECTOR PROCESSING 024

Never heard of it? If you're not a super-genius scientist or inter-dimensional space alien, then don't be concerned. Still sounds interesting though, doesn't it? Let Dr Carlo Kopp fill your mind with knowledge – a great feeling, especially if vectors turn your table.

## FEATURE: ATHLON 64 036

Wow. We've waited a damn long time to find out the performance of AMD's baby. John Gillooly has the sweet, juicy details – as long as you can handle sweet and juicy.




## FEATURE: AQUAMARK 3 032

Benchmarks, like rulers, involve numbers and are used to measure things. *Atomic* doesn't do rulers though. Ahem. James Wang has the nitty-gritty on Massive's new DirectX 9 benchmark, minus stationery.

## FEATURE: DIGITAL CAMERAS

Believe it or not, the technology behind digital cameras is fascinating. And the best way to get hot about digital cameras is to hear it from Dan Rutter, the man who knows all.

## 1337 WIN STREET

**Competitions** 094
What's *not* good about winning stuff? That's right, nothing!

**Subscriptions** 096
How about getting Atomic in your mailbox each month? It's good too!

# We're a little bit different

Who can forget the legendary Toyota Lexcen theme song? All those normal families, and their Labrador, singing happily in their new Commodore. Except it wasn't a Commodore – it was a Lexcen. Same car subjected to the Button Plan for the car industry – homogenise everything by making us choose between a Mazda 323/Ford Laser (for poor people or couples) or a Commodore/Lexcen (for the Howard Nuclear Family), because consumers don't care – right? The claim, 'a little bit different', was the great irony.

Well, we've made being different an art form. We've evolved a bit here and there, new sections, nicer design. But the core of what we do is still pure *Atomic*.

And cleverly, starting this month we're going to stay different, by doing something that everybody does, but differently. Yes – we're finally doing a monthly CD.

It's always been a great feeling, knowing that you all buy *Atomic* for what's *in* the mag. I know that other Editors suffer a small pain – never knowing what sells their mag – the mag itself or the CD on it. Now the time has come for a monthly CD. Something extra for you, something to make *Atomic* more complete.

Logan is our CD guy, and he's got the enthusiastic help of the whole team alongside him. We know that many of you feel that *Atomic* doesn't need a CD, and we understand that, because most of the CDs out there are stupidly pointless or just boring. We also know that when we have done CDs, you've liked what we've done. You've told us that. We know why too – because they're good, and different. And that's not hard to do – we manage to do that every month with the mag – now we're carrying the same standards to the CD.

Allow us to show you what we can do. I promise you now: the *Atomic* CD will always be cool, useful and different. And you'll notice that we haven't bumped the cover-price either. So – what's not to love?

It starts now. We proudly present to you, the Atomic Porn Toolkit. Yes kids, here is everything you need for the most satisfying online porn experience possible. Whack it on. You'll see. Manage your collection, treat yourself to the optimum viewing experience, be sure that your adult content doesn't compromise your PC's security and be confident that the next person to use your PC won't have a clue what you've been up to.

Fantastic! In the coming months you'll see where we're going with *Atomic* CD. Which is all over the place. We've got some pretty crazy plans laid out. It's exciting stuff and every month's CD will be totally different from the last.

As always, we'll be listening to all feedback. Got great ideas for what you want to see us do? Send ideas and any comments to cd@atomicmpc.com.au, and naturally we'll be keeping a close eye on the forums.

Welcome to a truly funky new era in *Atomic* history. It's new and different and fun and funky – and that's *very Atomic*.

**Ben Mansill**
Editor

atomic
MAXIMUM POWER COMPUTING

**EDITORIAL**
Editor: Ben Mansill bmansill@atomicmpc.com.au
Technical Editor: John Gillooly jgillooly@atomicmpc.com.au
Interactive Coordinator & Staff Writer: Logan Booker lbooker@atomicmpc.com.au
Staff Writer: Nathan Davis ndavis@atomicmpc.com.au

**DESIGN**
Designer: Tim McPherson tmcpherson@atomicmpc.com.au
Product Photography: Michael Frey photo_grapher@optusnet.com.au

**CONTRIBUTORS**
Tim Dean, Dr Carlo Kopp, Stuart Denham, Ashton Mills, Lachlan Newman, Simon Peppercorn, Ron Prouse, Daniel Rutter, Craig Simms, John Simpson, James Wang, Sean Tearney, Regina Edista, George Soropos, Ivon Smith.

**PRODUCTION**
Head of Production: Angela McKinnon amckinnon@atomicmpc.com.au
Production Coordinator: Melanie Whitfield mwhitfield@atomicmpc.com.au
Traffic Coordinator: Marissa McGarry mmcgarry@atomicmpc.com.au
Senior Sub Editor: Melanie Farr mfarr@atomicmpc.com.au
Sub Editor: Claire Doble cdoble@atomicmpc.com.au
Subscriptions: Eileen Chong echong@atomicmpc.com.au

Printed by PMP Print

Distributed by:
Gordon & Gotch Australia (03) 9805 1650
Gordon & Gotch New Zealand (09) 625 3005

**ADVERTISING + MARKETING**
t + 61 2 8399 3611 t + 61 2 8399 3622
Strategic Accounts Head: Andy Jackson ajackson@atomicmpc.com.au
National Advertising Manager: Cathy Snell csnell@atomicmpc.com.au
Account Manager: Alex Harding aharding@atomicmpc.com.au
Sales Coordinator: Joveline Bascon jbascon@atomicmpc.com.au
Marketing Manager: Kate Imberti kimberti@atomicmpc.com.au

**AJB PUBLISHING**
t + 61 2 8399 3611 f + 61 2 8399 3622
Unit 2–5/44–70 Rosehill Street, Redfern NSW 2016 Australia
Managing Director: Adrian Jenkins ajenkins@atomicmpc.com.au
General Manager: Simon Corbett scorbett@atomicmpc.com.au

**SUBSCRIPTION ENQUIRIES (INCLUDING CHANGE OF ADDRESS)**
Aust – t +61 2 9492 7399 f +61 2 9492 7310 e subscriptions@atomicmpc.com.au
NZ – t +64 9 625 3005 f +64 9 625 3006 e csharland@gordongotch.co.nz

***Atomic:*** *Maximum Power Computing* is published monthly by AJB Publishing Pty Ltd. Company registered in Australia (ABN 76 951 889 503). This publication may not be reproduced or transmitted in any form in whole or in part without the written permission of the publisher.

**Liability:** While every care has been taken in the preparation of this magazine, the publisher cannot be held responsible for the accuracy of the information herein, or any consequence arising from it. Please note that all review judgements have been made in the context of equipment available to *Atomic* at time of review.

**Editorial and product submission:** *Atomic* welcomes all information on new and upgraded products and services for possible editorial coverage. However, we respectfully point out that the magazine is not obliged to either review or return unsolicited products. The Editor welcomes ideas for articles, preferably sent in outline form, with details of the author's background and a few samples of previously published work. We cannot accept responsibility for unsolicited copy and stress that it may take some time for a reply relating to these submissions to be sent out.

**Artomic:** All submissions must be the original work of the person submitting, and submitted works become the property of AJB Publishing.

(ajb.publishing)

April 2002 – March 2003: 27,310

POWERCOLOR™

BEST GAME CARD in the WORLD

POWERED BY ATi

LARA CROFT TOMB RAIDER the angel of darkness

RADEON 9800 PRO, 9600 PRO BRAVO, and AIW Series
with FREE "TOMB RAIDER VI" - FULL VERSION

apc EDITOR'S CHOICE JUL 2003

PowerColor ATI
Radeon 9800 Pro
July 2003

HOT atomic

PowerColor ATI
Radeon 9700 Pro
November 2002

pc world RECOMMENDS

PowerColor ATI
Radeon 9700 Pro AIW
July 2003

Australia IT
Tel: 03 9543 5855
www.australiait.com.au

# CD ATOMIC COVER CD GUIDE

***Atomic* CDs: the only pieces of plastic guaranteed to have you pitching a tent in excitement.**

**This one especially, as it's the Porn Toolkit. Or pr0n — whatever floats your boat.**

Pr0n. What a fascinating abomination of the English language. Somehow it's worked its way into the *Atomic* lexicon. . . and it isn't going anywhere. So, we deemed it necessary – maybe to purge our literary souls of infestation, or to simply clear our collective consciousness of dirty, nasty thoughts – to make a CD filled with all the applications, programs and utilities you need to get grade-A 'supplements'; pictures; movies and, if you're aurally inclined, we suppose audio as well.

You'll also notice Boot Sector; it's a regular section of the CD that contains drivers galore. We've included the basics, such as the Detonators and Catalysts, but if you have any suggestions for what you'd like 'driven', email **cd@atomicmpc.com.au.** Incidentally, this is the same email you should contact if you have any problems with your CD that are not a result of your inability to handle a compact disc, or the fact that your drive is jammed with jelly.

## Boot Sector

### CONTENTS

- NVIDIA XP Detonators 45.23
- NVIDIA 9x Detonators 45.23
- NVIDIA NT Detonators 44.45
- NVIDIA nForce drivers (XP) 2.45
- NVIDIA nForce drivers (9x) 2.41
- ATI Catalyst drivers (XP) 3.6
- Omega Catalyst drivers 3.6
- ATI Control Panel 3.6
- ATI driver bundle 3.6
- ATI 9x Catalyst drivers 3.6
- Omega 9x Catalyst drivers 3.6
- VIA Hyperion 4in1 drivers 4.49p
- VIA standard 4in1 drivers 4.43
- VIA audio drivers 3.7
- SiS AGP drivers 1.16a
- SiS IDE drivers 2.03
- SiS Xabre graphics drivers 3.10.58

## BROWSERS

### CONTENTS

- Mozilla 1.4
- Mozilla Firebird 0.6.1
- Netscape 7.1

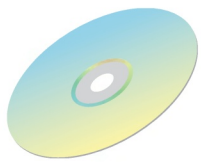
### Opera (with Java) 7.11

Need a new browser with plenty of features to spruce up your pr0n experience? Then give Opera a go. With a wide selection of keyboard and mouse shortcuts, a speedy browsing engine, multi-document interface and automatic pop-up stopper, you'll be wondering how you pr0n-surfed without it. Of course, it's just as great for normal Website perusal.

## CD TOOLS

### CONTENTS

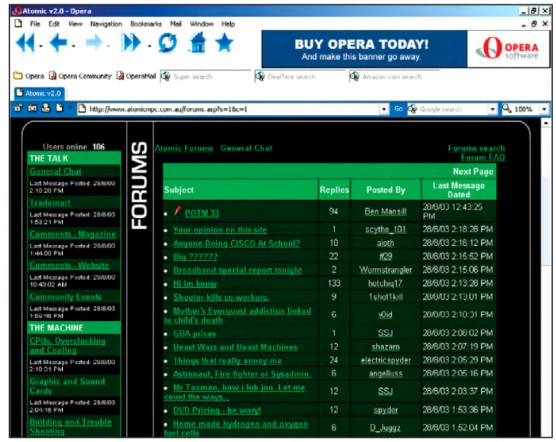
- CloneCD 4.2.0.2
- RecordNow Max 4.5



## CODECS

### CONTENTS

- DivX Basic 5.0.5
- DivX Pro 5.0.5
- Quicktime Player 6.3




## COMPRESSION TOOLS

### CONTENTS

- WinAce 2.5
- WinRAR 3.2
- WinZip 8.1 SR-1

## DOWNLOADERS

### CONTENTS

- GetRight 5.0.2
- Fresh Download 6.0
- Download Express 1.4 build 193

### Download Accelerator Plus 5.3

Resumers are cool. Say you have a 100MB download inbound on a 56K connection. Say you have an angry kid sister, or there's a naked mental patient loose. While your sister may leave it at pulling the plug,

birthday suit-man may not stop till he's made love to every telegraph pole in your neighbourhood. To make sure you get every byte, no matter the distraction, grab Download Accelerator. It's great at resuming downloads, as you'd guess.

## MEDIA TOOLS

### CONTENTS

- AVImedic 5.3a
- DivFix 1.1

### VirtualDub 1.5.4

It's so great, because it does *virtually* everything. Heh. Once you've recovered from that ripsnorter, you might want to have a closer look at this nifty utility. If you have a damaged AVI or want to recompress your DivX or XviD movies, this is the tool you need. It also has an amazing number of plug-ins and filters so you can tweak the arse out of your movies. Add temporal blur to all the AVIs you own!

## PEER TO PEER

### CONTENTS

- WinMX 3.31
- Grokster 1.6
- Morpheus 3.2
- LimeWire 3.3.4
- iMesh 4.1 build 133
- Earth Station Five 1.1.24
- Direct Connect (XP/2000/NT) 2.02
- Direct Connect (95/98/ME) 1.0 preview build 9
- DC++ 0.261

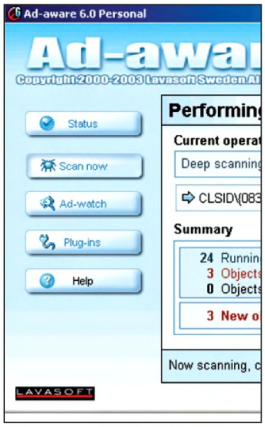
### Kazaa Lite K++ 2.4.1

Want the functionality of Kazaa without the adware? Then perhaps you should use Kazaa Lite. Not only is it free of pop-ups and the like, Kazaa Lite includes additional options not found in the vanilla version of Kazaa to speed up downloads and to make sure your connections to other file sharers remain up.

## PRIVACY TOOLS

### CONTENTS

- Ad-aware reference file 01R203
- PopUp Stopper 3.1
- Spybot Search and Destroy 1.2
- PowerCrypt 2000 4.4
- Window Washer 4.8
- Mini Popup Killer 2
- Mutilate File Wiper 2.8
- Ad Muncher 4.5
- GnuPG 1.2.2




### Ad-aware 6.0 build 181

Computer responding slowly and you're getting unexpected pop-ups, even when your browser is closed? Then you probably have some adware, or even spyware installed. These sorts of applications piggy-back on 'legitimate' software, and hide themselves so they're not easy to remove. Ad-aware will search for files and registry settings using its database of known adware and spyware programs and clean them off your system. Ad-aware will also auto-update is database while online.

## GRAPHICS

### CONTENTS

- Easy Thumbnails 2.6
- Paint Shop Pro 8
- Gallery 2.64

## SEALED SECTION

Yes, pretties, there's a super-sealed hidden section on this month's CD. Shiver in delight at the top-secretness.

GO TO PAGE 36

## QUICK CONTENTS

### Browsers
- Opera (with Java) 7.11
- Mozilla 1.4
- Mozilla Firebird 0.6.1
- Netscape 7.1

### CD tools
- CloneCD 4.2.0.2
- RecordNow Max 4.5

### Codecs
- DivX Pro 5.0.5
- Quicktime Player 6.3
- DivX Basic 5.0.5

### Compression tools
- WinZip 8.1 SR-1
- WinRAR 3.2
- WinAce 2.5

### Downloaders
- GetRight 5.0.2
- Download Accelerator Plus 5.3
- Fresh Download 6.0
- Download Express 1.4 build 193

### Boot sector
- NVIDIA XP Detonators 45.23
- NVIDIA 9x Detonators 45.23
- NVIDIA NT Detonators 44.45
- NVIDIA nForce drivers (XP) 2.45
- NVIDIA nForce drivers (9x) 2.41
- ATI Catalyst drivers (XP) 3.6
- Omega Catalyst drivers 3.6
- ATI Control Panel 3.6
- ATI driver bundle 3.6
- ATI 9x Catalyst drivers 3.6
- Omega 9x Catalyst drivers 3.6
- VIA Hyperion 4in1 drivers 4.49p
- VIA standard 4in1 drivers 4.43
- VIA audio drivers 3.7
- SiS AGP drivers 1.16a
- SiS IDE drivers 2.03
- SiS Xabre graphics drivers 3.10.58

### Graphics
- Easy Thumbnails 2.6
- Paint Shop Pro 8
- Gallery 2.64

### Media tools
- AVImedic 5.3a
- VirtualDub 1.5.4
- DivFix 1.1

### Peer to peer
- Kazaa Lite K++ 2.4.1
- WinMX 3.31
- Grokster 1.6
- Morpheus 3.2
- LimeWire 3.3.4
- iMesh 4.1 build 133
- Earth Station Five 1.1.24
- Direct Connect (XP/2000/NT) 2.02
- Direct Connect (95/98/ME) 1.0 preview build 9
- DC++ 0.261

### Privacy tools
- PopUp Stopper 3.1
- Ad-aware 6.0 build 181
- Ad-aware reference file 01R203
- Spybot Search and Destroy 1.2
- PowerCrypt 2000 4.4
- Window Washer 4.8
- Mini Popup Killer 2
- Mutilate File Wiper 2.8
- Ad Muncher 4.5
- GnuPG 1.2.2

## SHORT CIRCUITS

**Halo for the PC is finally going gold and Microsoft have announced a competition for all Halo sharp shooters to battle it out on the PC – the Halo PC Online Tournament. This will be hosted by Cyber Slam and in order to join up, pre-order Halo for PC at any leading retailer and you'll instantly be eligible to register for the tournament. Sixteen finalists will be selected from around Australia and flown to Sydney on 6 December to compete, of which the winner will be flown to America for the international Halo Tournament. For registrations and more info, head to www.cyberslam.com.au. Gear up!**

**Cellophane – that ordinary, transparent, coloured plastic many of us played with in kindergarten. Well a new use has just been discovered, and that is a way on creating very cheap stereoscopic '3D displays' on notebook screens (linearly polarised LCDs). A guy at the University of Toronto has reversed the need for the ultra-ugly glasses, instead, essentially putting them on the screen itself. individual.utoronto.ca/iizuka/research/cellophane.htm**

**In true Star Trek style, Europe is to launch the world's first ion propelled Moon probe, SMART-1. The primary objective is to try out the new propulsion engine. Once in space it'll open its 14 metre straddling solar arrays and use the captured 1.9kW of power from the Sun to propel its washing machine sized body through space. Its thrust is somewhat akin to the breath of your average human, but with a charged beam of particles pushing it forward, it slowly gains speed – ending up way beyond the speed of current rockets. www.esa.int/export/esaCP/SEMQ60Y04HD_Expanding_0.html**

NEWS

# Future Screen 2003

**Games as art - a symposium of future gaming trends**

Games are big. They're everywhere. They influence so many aspects of our lives from Snake on mobiles to Doom 3 on PC. With all this digital fun, we must be going somewhere. At the very least, there have been some trends.

In an attempt to analyse all this digital gaming, dLux media arts is presenting PlayThing, which takes current game trends and puts them into art form. The presentations will include a symposium, publication and exhibition, with artists, game designers and academics.

Undoubtedly, it would be great to find out where we're heading, especially if it involves being entertained as well. Visit **www.dlux.org.au** or email **dlux@dlux.org.au** for more information.

# DNA – the reigning game champ

Biotechnological computers have been somewhat of a sci-fi pipe dream until recent times. Now that scientists have been taking a good hard look at biological computing, we've been seeing all sorts of really wacky things coming out of their labs. Like those remote-controlled, live cockroaches, which you may have heard about a while back (**www.wireheading.com/roboroach**).

Well, the latest franken-flesh-phase comes in the form of the literally unbeatable DNA game machine named MAYA. Based around molecular logic gates, this slightly odd device will play Tic-Tac-Toe against a human opponent and is guaranteed to either win or draw. We kid you not – this thing is damn smart.

Designed by a small group of university goers, it is powered by enzymes and is the world's first DNA-processed game machine. The device is made of a small platform sectioned off by small squares in a three by three array. These enzymes calculate where to place its next move based on the opponents move. Human interaction is made by placing a small drop of DNA into one of the compartments. The rather intricate DNA 'computer' then decides where exactly would be the next best move, and signifies this via the green glow it emits from certain molecules being cut by the enzymes.

MAYA is quite a significant breakthrough, being the first interactive DNA system, but unfortunately it won't be doing a whole heap more than playing naughts and crosses, as that's all it's really capable of. No chance of biotech-strip poker here, folks.

However, this could pave the way for a new type of medication field. We could have ourselves 'programmable pills' in the not too distant future. For example, if you catch the flu, a DNA mixture could be whipped up, with the molecules programmed to search and destroy any signs of the virus, whilst also increasing your immunity levels. More importantly, it may be engineered to perform something all geeks require – provide us with plentiful amounts of caffeine.

AWAKEN TO THE ACOUSTIC REALISM OF

Sound BLASTER AUDIGY 2

## Experience EAX® ADVANCED HD™ in Enter The Matrix™

No one can be told what Enter The Matrix™ sounds like on a Sound Blaster® Audigy™ 2 sound card. You have to hear it for yourself. With 24-bit ADVANCED HD™ audio quality and EAX® ADVANCED HD™ technology, experience life like sound and dramatic effects just like in the real world. The THX® certified Sound Blaster® Audigy™ 2 also delivers 6.1 Surround in Enter The Matrix™ and over 400 other 3D games. For more information, visit **www.australia.creative.com**

**Visit our new Product Showroom: Shop 3-5, 524 Parramatta Rd, Petersham, Sydney. Ph: (02) 9021 9800.**

Monday to Friday. Showroom only – no sales. To purchase our products please ask your favourite reseller. To find out who our resellers are, call our new office number above.

CREATIVE INSPIRE

**RECOMMENDED SPEAKERS: Creative Inspire 6.1 6600 at Recommended Retail Price of $299 inc GST.**

Sound BLASTER 24-bit ADVANCED HD 192kHz/106dB SNR

THX EAX ADVANCED HD

**Also available Sound Blaster Audigy 2 Platinum and Sound Blaster Audigy 2 Platinum eX.**

**Sound Blaster Audigy 2 starts from $249 inc GST. CALL YOUR RESELLER TO ORDER YOURS TODAY!**

™ 2003 Warner Bros.
©Warner Bros. – U.S., Canada, Bahamas & Burmuda.
(s03)
©Village Roadshow Films (BVI) Limited – All Other Territories.

©2003 Creative Technology Ltd All rights reserved. The Creative logo is a registered trademark of Creation Technology Ltd. in the United States and/or other countries. All brands or product names listed are trademarks or registered trademarks and are property of their respective holders.

CREATIVE
CREATIVE LABS PTY LTD

# JOLT COLA

Since we announced the Jolt Cola competition in *Atomic 30*, we received loads of wild suggestions for the soon-to-be double-caf version of Jolt Cola (guaranteed to have you pouncing off walls/ceilings in no time). Thanks to all entrants – there were certainly many terrifically wild ideas. So wonderful, in fact, it was a month harder for Jolt Cola to choose a winner than expected.

Congratulations to Ryan Hough with his explosive entry of 'Headshot'. Pure genius. Now the lucky winner of a slingpack bag with a hat, t-shirt and can holder, there's plenty of drink holding and gear wearing goodness to be had. Neat!

Jolt is now in the process of scheming what they'll do with such a funky word.

# AUS EGAMER

Once a year there comes about an event that leaves you 3 inches off the edge of your seat. Played to determine who represents Australia in this year's championships in Korea, the World Cyber Games once again rocked Australia with its unique blend of fast paced gaming and entertainment.

This year Intel and Samsung hosted the biggest WCG Australia to date. The day started with a few surprises, CS clan Bronx meeting a very narrow defeat from Australia's number one team, Function zerO and WA clan 23 taking down some big names. CS moved slowly with mostly predictable matches taking place well into the evening. By the end it was Function ZerO, XtremeRevolution, 23 and Bronx left to battle it out. The matches were fast and furious with XtremeRevolution taking out Bronx in killer fashion. Needing to win two maps to topple the giant of Function ZerO, XR went in with frantic determination to succeed. Facing one of the most successful lineups in Australian CS competition, they narrowly missed out defeated 13-11 in a match worthy of the shouts and hooting it caused. In the Warcraft III and Starcraft matches the big rivalry between Cyberage sponsored XRIRaggy and XRIGoldeN played itself out with both undefeated going into the finals along with Kinnear and Neural. Golden took down both Neural and Kinnear to force a final against Raggy.

**ABOVE: The slammin' Aussie winners relax before taking on the world!**

Representing Australia at the E-Sports World Cup in France earlier this year, Raggy proclaimed his self-confidence: 'Man I know I can win this if I try, anything I say is to agitate my opponent, if I agitate him, he is gone'. He then outmanoeuvred Golden's NightElf army with his small yet efficient Undead scourge.

Starcraft brought the top three players in Australia together for some of the best gaming at this year's WCG. Protoss powerhouse Starhunter showed his skill sending both L!MP and Razor into the ground. Although interest in Starcraft in Aus has waned, it still remains the most popular e-sport in Korea, home of pro-gaming.

The Unreal 2003 contingent proved they are still a (very powerful) vocal force in Australia with matches marked with hooting and excessive use of the word 'owned'. Blasting his way into the first place was Aus champion Snoop*dx followed closely by XRIsickz in third after a brilliant game of oldschool skill and trash talking excellence.

The lights began to dim and the players put their hands together as the winners were presented with their team t-shirts. XR, having secured two second placings, a first place and a third place respectively, dominated the stage and the glory. Hands were shaken and poses struck for the cameras, our Aussie team looked ready to take on the world. Good luck and happy fragging to all the gamers on the Australian team, let's hope they do us proud in Korea! – ***Stuart Denham***

## WHAT'S HOT

- Quaternary computing – count faster
- Cold fusion – long enough
- Winter – free cooling
- Tic-Tac-Toe – hardcore gaming
- Google – super maths wiz

## WHAT'S HOT

- Binary – only 10 choices
- Perpetual motion – too long
- Summer – spelt d.e.a.t.h.
- Digital games – stinky pinky
- Calculators – won't write 'prOn'

# atomican

**You can't have a couple of cold ones with your computer. Unless your cooling solution somehow involves beer, it isn't really going to work or be that much fun trying to dry out your CD drive. Being inventive types though, Atomicans everywhere must resort to the next best thing. The l337 m337(tm).**

**The amber liquid flowed in abundance at the annual Sydney m337. v3.0 returned to it's 1.0 roots at Sports Central, Fox Studios. With a Battle of the Sexes on the pool table, an invincible editor on Sega Rally, and passed out Atomican fr3nzy, much fun was had as can be seen and read in the m337 fallout and photo threads (www.atomicmpc.com.au/forums.asp?s=1&c=1&t=20353 and forums.asp?s=1&c=1&t=20368) to witness the glory by proxy.**

**Mexican... I mean Victorian Atomicans are also able to hold copious amounts of liquid, alcoholic or otherwise. Even more so than their Northern cousins in some cases. As such The Melbourne Beer-a-thon is slated in for the end this month to find out just how much a Victorian can hold. Up to the fourth iteration, it will definitely be as fantastic, if not more than, the previous three. Check out forums.asp?s=1&c=5&t=366 for more details.**

**With the war in Iraq all but over, the media must now turn to local terrorist events to satisfy the public bloodlust. One such act happened on the Atomic forums this month, with the kidnapping of Mac Dude Jnr by Morris. Kidnapping, hostages, torture, threats of violence, tanks, voodoo dolls, spaceships, this saga has the lot. To see how it all unfolded, slink your way to forums.asp?s=1&c=1&t=17707.**

**Modding your case not satisfying your creative desires? Neons, watercooling, windows, perspex, and cold cathodes already installed in every nook and cranny of your computer? Then what better way to satisfy your modjisu than modding your own body! Plenty of Atomicans have already come up with great ideas for body-mods in Khirareq's thread (forums.asp?s=1&c=1&t=19958) so get out there and start impressing the ladies with a UV case fan in your chest!**

**And as always, remember that nobody expects the Spanish Inquisition! Wilkshake**

## POTM 33

**Khirareq has got to be the most accident prone person since Frank Spencer.**

**And just as funny, too.**

**His ongoing tales of personal injury, misfortune and un-coordination have amused us and elicited sometimes genuine sympathy.**

***Khirareq* wins the luscious Logitech MX 700 cordless mouse. Which, I fear, being cordless, will soon be lost or 'borrowed' by another family member for uses not intended by its designers.**

DIAMOND VIEW
For the serious gamer
MITSUBISHI ELECTRIC
Mitsubishi Electric Australia Pty. Ltd. 348 Victoria Road, Rydalmere NSW 2116
Phone: (02) 9684 7777 Fax: (02) 9684 7208 www.mitsubishi-electric.com.au
Delta Force Black Hawk Down images courtesy of NovaLogic

# V-PrOn

**Dan Rutter wonders how bright a future without porn will be?**

OK, so where's the pornographic 3D software?

I don't mean here, in this office, where I'm writing this column. I don't partake of that sort of thing. At all. Ever.

Don't look in that drawer. It contains nothing but dry leaves.

What I mean is, where's the porno 3D software in general?

Porn is a giant industry. Lots of people have 3D graphics accelerators. Why don't we get spam about Super 3D Hotties Who Do What You Say?

That software would be rubbish, of course, because nearly nothing sold via spam is worth buying for one Hong Kong cent. But the spam would be indicative of the existence of 3D X-rated 'games' where you got to tell little on-screen people what to do, or watched the action from a first person perspective, or whatever.

There are a few such packages out there; there have been for ages. Porn games started out 2D (oh, the horror over 'MacPlaymate' back in 1986, and the thrill of sneaking it into the school computer room!), and there actually are a few 3D ones around today. But they all pretty much stink, at least from what I can see on the sites spruiking them.

(Which I visited in an entirely detached, thoroughly professional and completely tax-deductible way, I'll have you know.)

One of those humorous screen grabs of Counter-Strike dudes apparently engaged in the Congress Of The Beetle is a heck of a lot more realistic than anything I've been able to find. There are 'interactive movies' where you can direct the action, Choose Your Own Adventure style, but there's precious little real time rendered material.

On the face of this, this is weird. The porn industry is famous for being at the very atomic wavefront boundary of the cutting edge of any technology they can possibly use.

There's a popular legend that VHS took off because Sony wouldn't let people release porn on Betamax. Well, that's not true; Sony had some control over the Beta licensees, but those companies made VCRs, not movies. The real reason was that early Beta tapes were only an hour long. That was good enough for TV show timeshifting, but no good for movies, dirty or otherwise.

VHS quality sucked (and still does), but its tapes were longer. And porn was a significant factor in its victory over Beta.

DVD? It's superb for porno. The scene selection allows you to skip all that boring talking. Long before a decent selection of clean DVD movies were available, there were slabs of porn.

> **"It'll be a little while before the average PC can render reasonably realistic nudity."**

JPEG, as a free-for-all image format, was created to reduce the bandwidth consumption of alt.sex.pictures, which at the start of the 1990s was becoming such a monster GIF-stream that many Usenet servers were dropping it not out of prudery, but just to stop their pipes being clogged. JPEG allowed you to send five 24 bit images of people doin' it for the bandwidth price of one eight bit GIF of the same thing, so the world's digital pornhounds switched format as soon as they could.

Porn companies are even trying to get people to buy naughty clips to play on mobile phone screens, for heaven's sake. Don't ask me why. But if evidence were needed for the smut-peddlers' enthusiasm to, ahem, probe every niche, there it is.

So – why no 3D porn software?

Well, part of it's got to be the inability of computers so far to render really realistic humans, or even really realistic cartoon humans. Humans realistic enough to shoot at? Yup. Humans realistic enough to have sex with? Nope.

But we're close, now. Look at NVIDIA's famous Dawn demo. If you find it inadequately convincing, rename the 'fairy.exe' file to '3dmark03.exe' or 'quake3.exe', for versions of Naked Dawn with and without wings.

NVIDIA put a Naked Fairy Feature right there in the demo, people! 'Cinematic computing', indeed!

But the kind of cinema where, ah, the carpet's not sticky for the usual reason.

Now, the porn industry's interested in selling to regular people, not PC enthusiasts with the latest shiny video card, and it'll be a little while before the average PC can render this level of reasonably realistic nudity. So that might account for the current lack of porno software.

It also might be a production issue. A porn game would, in many technical respects, be the same as a normal game – you'd need decent programmers and artists and animators, you'd need voice talent, and you'd need design people able to craft a workable user interface.

Yes, you sniggerers in the back row, that interface would need to be usable with only one hand.

Maybe there are substantial technical issues I'm missing here. I shudder to think what clipping errors might do, for instance. And something that looks good in a screenshot isn't necessarily convincing in motion. The Final Fantasy movie's characters moved more like dead bodies animated by invisible wires than like real humans. The necrophiliac market probably can't support a software industry segment.

Still, if Half-Life 2 can contain realistically flopping and floating mattresses, I can't help but think that user-directed activity atop them is only a matter of time. With realtime multiplayer online action, even.

And you know what? I'll bet you twenty bucks that some moral crusader who used to complain about kids shooting each other online is going to be much, much more hysterical about people making love, not war.

# MODWARE

PC's are no longer boring. At Anyware, we distribute a wide range of special PC cases, lights, coolers, fan grills and other case modding gear. We call this MODWARE™. As a wholesaler, however, we do not sell directly to the public. Please ask your local PC dealer for stock and price information. Alternatively, you may contact one of the resellers below.

## RESELLERS

**VIC**

| | | |
|---|---|---|
| Digiworld | Melbourne | 03-9663 6699 |
| Newcomputers.com.au | Oakleigh | 03-9568 6088 |
| Scorpion Technology | Burwood East | 1300 726 770 |
| PC Case Gear | www.pccasegear.com.au | |
| Computers & Parts Land | Notting Hill | 03-9548 7088 |
| eAccessories | Box Hill | 03-9898 2366 |

**WA**

| | | |
|---|---|---|
| Austin Computers | Osborne Park | 08-9201 2788 |
| PLE Computers | Wangara | 08-9309-4771 |
| Navada Computers | Osborne Park | 08 9446 4099 |
| NetPlus Micro | Osborne Park | 08 9242 7288 |

**NT**

| | | |
|---|---|---|
| Tec Chips | Coconut Grove | 08-8948 3663 |

**QLD**

| | | |
|---|---|---|
| Quality & Innovation | Brisbane City | 07-3220 2500 |
| Karana Computers | Chuwar | 07-3812 5211 |
| Add To Computers | CAIRNS | 07-4031 6883 |
| TNQ | Mossman | 07-4098 3888 |

**ACT**

| | | |
|---|---|---|
| Ailean | Phillip | 02 6257 1717 |

**NSW**

| | | |
|---|---|---|
| BusyBits | www.busybits.com.au | |
| AusPCMarket | www.auspcmarket.com.au | |
| ECOM Computers | Sydney City | 02 9299 0022 |
| ECOM Computers | Chatswood | 02 9415 1981 |
| JEC Computers | Hornsby | 02 9477 7988 |
| Microtech Corporation | Auburn | 02 9648 1818 |
| Upgrade Yourself | Dee Why | 02 9982 9939 |
| Equipt | Sans Souci | 02 9593 4776 |

**SA**

| | | |
|---|---|---|
| Duncan Computers | Adelaide | 08 8212 6600 |
| Adrenalin Computers | Adelaide | 08 8410 0777 |
| Boost Computers | Adelaide | 08 8410-2722 |
| Cherry Computers | Adelaide | 08 8232 5700 |

**Anyware™ COMPUTER ACCESSORIES** www.anyware.com.au

| SYDNEY | MELBOURNE | PERTH | ADELAIDE | BRISBANE |
|---|---|---|---|---|
| TEL: 02-9879 5788 FAX: 02-9879 5388 | TEL: 03-9763 8200 FAX: 03-9763 8400 | TEL: 08-9242 8588 FAX: 08-9242 8688 | TEL: 08-8347 0488 FAX: 08-8347 0466 | TEL: 07-3856 3999 FAX: 07-3856 1777 |

# RFID

**Sometimes we see the cusp of a new technological wave coming. We don't always know the shape of it, but when it hits, it makes a splash. Ashton Mills takes a look at the storm of RFID.**

RFID, or Radio Frequency IDentification, is a retailer's dream and possibly a consumerist nightmare. Think of RFID as minute wireless ID transmitters that can be attached to just about any product – clothes, shoes, home appliances, PC gear, music CDs, food and more. Basically, everything.

RFID works by utilising an embedded processor and antenna coupled with a unique EPC (electronic product code). They range in size and can be a small as a grain of sand if required. If you were wearing RFID-tagged clothes right now, you wouldn't know it.

Most RFID tags are passive – that is, they transmit their EPC only when they receive a querying signal, and most use the signal itself as a power source to transmit.

> **If you were wearing RFID-tagged clothes right now, you wouldn't know it.**

Active tags require the presence of a battery of some sort to power the chip and have the advantage of being able to broadcast their information over a larger area. Passive tags only have a range up to 12 metres, while active tags can conceivably transmit from kilometres away.

Bar physically crushing them, passive tags can last indefinitely. The running joke is that you can microwave your clothes to overload the tags, but apparently this is just as likely to cause them to burst into flame. Once you have RFID-tagged gear, there's not a lot you can do about it.

Not all products are taggable, though the exceptions are few. Products containing liquids and some metals are hard to effectively read – liquids tend to absorb radio frequencies, while metals can reflect or refract them. Still, these problems are being worked on.

On the one hand RFID will revolutionise inventory logging and tracking, allowing manufacturers and retailers to finally, after all these years, get accurate statistics of the flow of inventory from the start of the production process right to the end at the point of sale including – and this is what has privacy groups up in arms – after it leaves the store in the hands of the customer.

This small nagging hurdle aside, RFID proponents are salivating at the possibilities. Quite literally, they have their sights set on tagging every producible item in the world – because the value of the information provided by tracking the production and consumer cycle lies not just in optimising production, but also in the selling and marketing of these products.

Marketroids are bouncing up and down in glee, for what greater marketing tool could there possibly be than accurate statistics of consumer buying habits? Of where these consumers live, and the volume and range of the products they buy? Apparently, one goal is eventually to monitor how people use products in their own home. And if this happens you can be treated to even more annoying, and *truly directly targeted* methods of advertising.

The devices used to read RFID tags can be placed anywhere, and the short term vision is to at least put them in the stores, warehouses and production systems which utilise RFID technology. In the long term this could be expanded to public areas such as airports, highways and shopping centres. Eventually even entire cities could be blanketed, but this would most likely rely on the use of active tags.

And if/when this happens there would certainly be some positive uses. Your fridge could determine when it's out of certain foods, and automatically order more online. Mitsubishi Electric has already developed the iGlass, a beer glass with a level monitor and RFID tag that can signal the bar when the glass is empty. And assuming there was a blanket network across a city, police could quickly and easily track down stolen goods – the dog who dared to steal your Supreme Ninja beast with the latest NVIDIA BFG GPU can be found, punished, and your baby returned. Theoretically, at least.

But it's this tracking and identification ability – yet another aspect of the information ubiquity I talked about two issues back – that has privacy groups concerned. For example if the police can track RFID products then they could track the people wearing them, and even see what a person was carrying without even frisking them.

'Have you been drinking sir?'

'No?'

'The bottle of bourbon in your glove box says otherwise!'

Already the European Bank is looking to RFID its banknotes by 2005. The information about the flow of cash this could provide could be astonishing. Entire histories of the flow of money from hand to hand could be built and analysed. In the states RFID-tagged products are on trial, with Wal-Mart especially diving in head first, but no law currently exists to regulate their use.

Obviously this makes some people unhappy. The www.stoprfid.org site asks 'Are you wearing track shoes?' (Wal-Mart has been trialling an RFID-tagged sports shoe) and, on hearing about Benetton planning to RFID-tag its entire clothing range, started a campaign to change their mind. Which they did, but only for now.

And this is the thing about technological waves, they will eventually come. They may be sandbagged to delay them, but whether all products in the future will have trackable and traceable tags is not an if, but a when.

It is, however, up to us, the general population, to decide on exactly just how deep the rabbit hole will go through political lobbying.

If all products are trackable, why not people too? How much easier would it be to track down criminals then? Though the current backlash is an overreaction, the potential for abuse is a distinct possibility, so it is worth getting in the door first and trying to lay down guidelines for RFID use.

Keep an eye on RFIDs, if you can.

# Maximize Your Digital World!

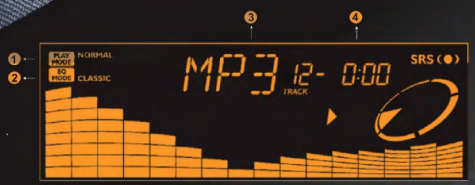
Barebone

# MEGA

MSI Entertainment and Gaming Appliance

MP3 PLAYER | Hi-Fi STEREO | SUPER PC | INTERNET | FANCY LCM | 6 IN 1 CARD READER | IEEE 1394 | USB 2.0 | OPTICAL SPDIF

- Hi-Fi Stereo / Mini Audio
- Performance PC
- Home Theater




## MEGA Fancy LCM

MEGA Fancy LCM can show the MP3/CD/AM/FM status on the screen. You can also select the Normal, POP , Classic and Jazz mode to listen your favorite music.

1. PLAY MODE (NORMAL / RANDOM / REPEAT / REPEAT DISC)
2. EQ MODE (NORMAL / POP / CLASSIC / JAZZ)
3. STATUS (MP3 / CD / AM / FM)
4. CLOCK / TIME / TRACK

## Award for MEGA

| | | | | | |
|---|---|---|---|---|---|
| HarewareZone Singapore May 2003 | HarewareZone Singapore May 2003 | Tbreak.com UAE Jun. 2003 | ComputerDIY Taiwan May 2003 | IMPLOZJA.com Poland Jun. 2003 | SFFTECH.com U.S.A. Jun. 2003 |

## MEGA Goods [Optional] Design for MEGA

MEGA 5.1 Home Theater Speaker

MEGA 2.0 Hi-fi Speaker

MEGA TV Tuner Card (MS-8606)

MEGA TV Out Card (MS-8957)

MEGA Deluxe Bag

## MEGA 651 (MS-6251)

| | |
|---|---|
| PC Power Off Features | Equalizer LCM / AM/FM Radio Tuner / Play Back Audio CD / MP3 / Remote Controller |
| M/B | MS-6760 |
| Chipset | SiS651/962 |
| CPU | Intel P4 up to 2.8G |
| Memory | 2 DIMM (DDR333) Max 2GB |
| VGA | Integrated |
| Expansion Slots | PCI x 1 + AGP(4X) x 1 |
| Front I/O | Mic-in/Head-Phone / USB x 2 / IEEE 1394 x 2 (6 pin & 4 pin) Optical SPDIF-in / 6 in 1 Card Reader |
| Rear I/O | COM / VGA / Parallel / PS2x2 / LAN / USB x 2 / Optical SPDIF-out Speaker-out/Line-in/Mic-in (AC'97 Codec, 5.1ch) / Modem |
| PSU | 200W PFC |
| Chassis | 202(W) x 320(D) x 151(H) mm (9.76 Liters) |

MSI MICRO-STAR INTERNATIONAL

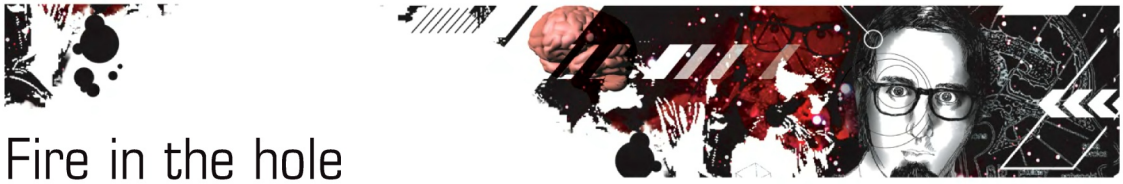

***Australia***
MSI Computer (Australia) Pty. Ltd.
Tel: 61-2-9748-0070
Fax: 61-2-9748-0799
http://www.msicomputer.com.au

Also Technology
NSW/ACT Tel: (02) 9519 4600
VIC/TAS Tel: (03) 9560 3388
QLD/NT Tel: (07) 3357 4300

Ingram Micro Australia
Tel: 1300 65 3333
Fax: (03) 9545 3326

Leader Computers
SA Tel:(08) 8112 6000

Legend Performance Technology
NSW Tel: (02) 9662 2811
QLD Tel: (07) 3397 0799
WA Tel: (08) 9389 4422
VIC Tel: (03) 9545 3969



# Fire in the hole

**Counter-Strike 2 hasn't actually been officially announced yet, but that doesn't stop Tim Dean from criticising it.**

I remember it as if it were yesterday.

Which in itself doesn't necessarily lend the occasion any more particular psychological significance than any other occasion as I can't remember what I did yesterday anyway.

Given that, let's take the assumption of the Inverse Law Of Memory, where the likelihood of someone remembering something is inversely proportional to the distance in the past the event occurred, is true. (Of course, we would be ignoring all evidence to the contrary, such as the ever-entertaining 'ads game', which you play while watching prime time television. At random intervals during ad breaks you ask your family member/friend/partner/flatmate what ad was on before the one that you're currently watching. I've never seen a strike rate above about 25 percent. Telling. . .)

So, it was like yesterday. I'm talking about the release of Beta 1.0 of Counter-Strike on 19 June, 1999. I was playing Team Fortress Classic at the time, running my usual fare of 'annoyance operative' by playing the pyro then spy alternatively, when someone frantically typed 'IT's out!1 counter-Striek beta 1. i'm off to download it now'.

I remember hearing about this mod a couple of times before, but frankly, I didn't really know what the fuss was about. Nevertheless, I dropped out of TFC and headed straight over to www.qgl.org, the site for the Queensland Gamers League, the choice site for local news and downloads at the time (and still a top site).

An hour or so later, I was up and running. First map: cs_mansion. Joined CTs. Asked how to buy weapons. Bought ammo (individual clips back then – you couldn't just fill up your gun – and there were a number of ammo bugs too), and hilarity ensued.

The reason I say all this is I recently fired up the ol' CS again (for reasons of training for the World Cyber Games IT journalist tourney), and had a number of positive, and negative, flashbacks to the highs and lows of the game. The gameplay is still fast and dynamic, although not as frenetic as Quake deathmatch; the weapons are reasonably well balanced, and each has strengths and weaknesses; the interface is slick and the complexity is kept to a minimum, unlike other team-based games like Tribes 2; some of the maps are still a lot of fun, but others are still too one-sided or too big; and there's still the organic mix of talented team players, lone guns and idiots running around flashing their own team.

Anyway, this all got me thinking about Counter-Strike 2, which I imagine will be with us sooner than we think (unlike Team Fortress 2 – the game that never existed, doesn't exist, and never will exist – like BitBoys). In fact, I reckon Counter-Strike 2 will be with us this year, probably just before Christmas.

> **"... just because we can make a game more realistic in look and gameplay doesn't mean we should do so."**

My reasons for this are that while Half-Life is sure to be a life changing game, and for most gamers, including myself, firmly planted in the category of 'need', not 'want', there will be a lot of people who, at the end of the day (and the end of the single player game) will just want to play Counter-Strike 2. If Valve had announced CS2 was coming out sometime after HL2, they may jeopardise some of the sales of HL2. So, they keep quiet on the whole thing, release and sell the buggery out of HL2, then BOOM, they release CS2 just before Christmas – just when people have finished the single player game, and are starting to itch for another game or a more satisfying online experience.

Reports are already seeping out about how easily modded HL2 will be, which will make it even easier for the CS team (i.e. Gooseman), who is already holed up somewhere beavering away on something. Could that be CS2? Well duh. . .

Anyway, I might be wrong about CS2's release, but I'm definitely looking forward to what it will be like to play. First off, it should take at least a couple of months before the arse-bandit cheaters figure out a way to ruin the game for everyone in their quest for greater self esteem to boost up their egos crushed under the weight of the mind numbing and soul destroying realisation that they are the saddest and most pathetic beings, and so far beneath contempt that archaeologists 10,000 years from now will only just begin digging up the first remnants of their hollow lives. Whoa. Can you tell they're why I stopped playing a couple of years ago in the first place?

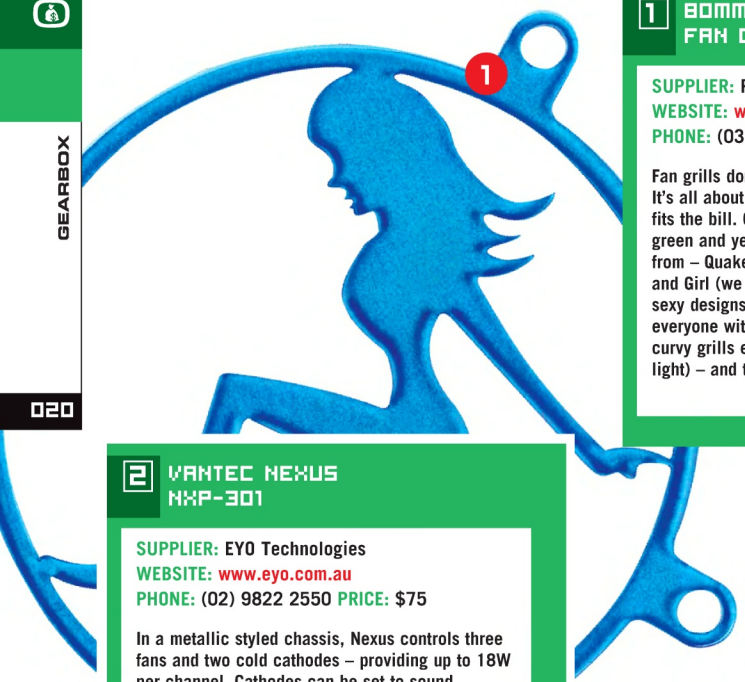
So, I'm looking forward to what can be done with CS2 in terms of gameplay, but I do have some reservations. First off, if you ever played Action Quake 2, also a Gooseman production, then you'll know that, graphics be damned, it had the best gameplay dynamics of any multiplayer first person shooter ever. CS was exemplary, but in my opinion, is just pipped by AQ2. My feeling is that as graphics improve, and arguably get more 'realistic', the implicit assumption of the developer is that the game needs to get more realistic too. I think this assumption is flawed. As I mentioned a couple of columns ago, Cezanne was painting in a time when it was quite possible to paint a startlingly realistic rendition of fruit in a bowl, but instead he used his skill and vision to paint something that didn't look just like a real bowl of fruit. In the same way, just because we can make a game more realistic in look and gameplay doesn't mean we should do so.

So hopefully (and I do have tremendous respect for and confidence in Gooseman) the gameplay will be based on a premise of 'fun' and not just 'realism'.

I also hope the maps are sensible, and the map makers don't go over the top in terms of layout and size. There seems to be an impulse to make big maps just because you can, yet it is small maps with only a couple of well-placed choke points, that always yield the best games.

So, we'll have to wait and see what the actual game is like, but it's shaping up to be a better Christmas games season than last year. Bet ya TF2 doesn't come out though. . .

A SPY · AN INVISIBLE MAN · A HUNTER · A VAMPIRE · A WARRIOR · AN IMMORTAL · A BEAST
SEAN CONNERY
THE LEAGUE
OF EXTRAORDINARY GENTLEMEN
M 15+ RECOMMENDED FOR MATURE AUDIENCES 15 YEARS AND OVER
MEDIUM LEVEL VIOLENCE
TWENTIETH CENTURY FOX presents a DON MURPHY production SEAN CONNERY "THE LEAGUE OF EXTRAORDINARY GENTLEMEN" SHANE WEST STUART TOWNSEND PETA WILSON
JASON FLEMYNG TREVOR JONES MICHAEL NELSON EDITED BY PAUL RUBELL, A.C.E. PRODUCTION DESIGNER CAROL SPIER DIRECTOR OF PHOTOGRAPHY DAN LAUSTSEN EXECUTIVE PRODUCERS TREVOR ALBERT MARK GORDON
PRODUCED BY DON MURPHY BASED ON THE WORK BY ALAN MOORE AND KEVIN O'NEILL SCREENPLAY BY JAMES DALE ROBINSON DIRECTED BY STEPHEN NORRINGTON
©2003 TWENTIETH CENTURY FOX
IN CINEMAS OCTOBER 2
THE POWER OF SEVEN BECOME A LEAGUE OF ONE
See it first @ foxmovies.com.au




## 1 BOMM UV REACTIVE FAN GRILL

**SUPPLIER:** PC Case Gear
**WEBSITE:** www.pccasegear.com.au
**PHONE:** (03) 9568 0932 **PRICE:** $6.50

Fan grills don't protect wandering digits any more. It's all about looks, and this eye tantalising grill fits the bill. Offered in UV reactive colours of blue, green and yellow, there are five designs to choose from – Quake III, Unreal Tournament, Flame, Blade, and Girl (we naturally chose the chick). With these sexy designs, you'll have control over everyone with the hypnotic glow these curvy grills emit (with the aid of a UV light) – and they're hot damn cheap.

## 2 VANTEC NEXUS NXP-301

**SUPPLIER:** EYO Technologies
**WEBSITE:** www.eyo.com.au
**PHONE:** (02) 9822 2550 **PRICE:** $75

In a metallic styled chassis, Nexus controls three fans and two cold cathodes – providing up to 18W per channel. Cathodes can be set to sound sensitive, on or off. Fan speed ranges from off to touching on full speed (without other connected devices). Behind each dial is an LED shone through green acrylic, giving off a purrdy glow. Kudos to the informative layout of the manual. Extremely easy to set-up and use, you should certainly check this out.

## 3 EVERGLIDE MOUSE PADS

**SUPPLIER:** GamerzStuff Australia
**WEBSITE:** www.gamerzstuff.com.au
**PHONE:** (03) 9888 3188 **PRICE:** Giganta Optical Smoke V3 $45; Attack Pad Optical V3 $35

Self-respecting gamers require a perfect mousing surface. The two we tested left us half impressed – we fell in lurv with one but melted the other in a fit of rage. The Giganta Optical Smoke V3 was a dream, providing a nicely textured surface. However the aptly named Attack Pad Optical V3, felt like a textured sheet of rubber. If you enjoy playing unstick-the-mouse then buy the Attack Pad, otherwise the Giganta comes recommended, albeit at its mammoth size.

## 4 NANOTHERM PCM+

**SUPPLIER:** GameVision
**WEBSITE:** www.gamevision.com.au
**PHONE:** (02) 9345 0033 **PRICE:** $15

The Nanotherm arrives in a mini 2mL dropper bottle with a mini spatula. Originally being watery, it fills the tiny pits – later thickening to a more solid state after its seven day burn-in period. Simulating an 'under stress' P4 environment, we set Chernobyl to 80W for several days. With ambient room temperature 22°C, it stabilised at 40°C, compared to our test with no goop of 48°C. Not cheap at $15 it beats the Shin Etsu by a degree. Worth it? Let your wallet decide.

GEARBOX

## 5 SHIN ETSU THERMAL PASTE

**SUPPLIER:** Desmond Liu
**WEBSITE:** desmondliu@optusnet.com.au
**PHONE:** 0404 088 056 **PRICE:** $15

Not quite as hard as some constipated pastes, it has the consistency somewhat similar to half-hour-old seagull poop, with firm yet moist spreading properties. It's contained in a thermal goop syringe with a few small doses inside – no bonus spreading tool. Testing in the same ambient room temperature using the same settings as the Nanotherm, it hit 41°C. Even though it may only be a degree lower, the Nanotherm is the exact same price as this and seemingly slightly more worthy of your cash, to a certain degree.

## 6 IOSS RD3XP-A#-K SINGLE DRIVE IDE CABLES

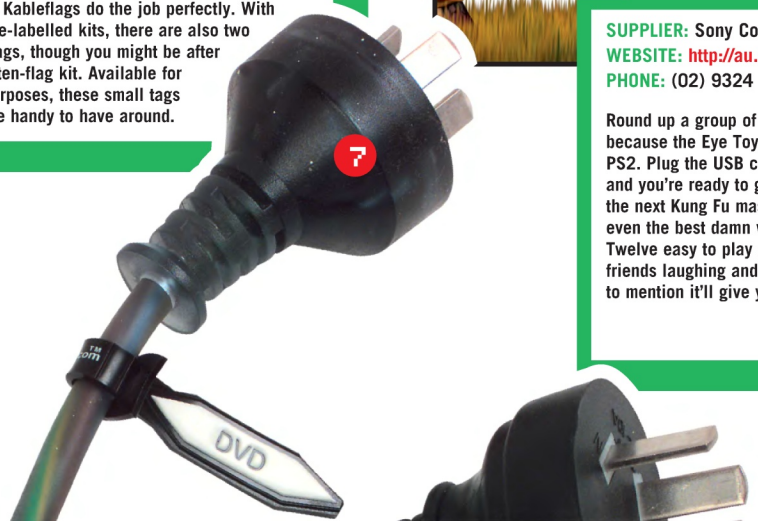
**SUPPLIER:** PC Range
**WEBSITE:** http://www.pcrange.biz
**PHONE:** (08) 8322 9544 **PRICE:** $22-29

Looking for short, single-device, rounded-cables, rated at ATA133 and crafted with perfection. Well, you need search no further!
These cables are not only technically superior, and visually stunning, they are also available in perfect lengths for cases crowded with multiple HDDs – 20, 30 and 50cm. Now there is no excuse for excess metres of airflow-destroying beige ribbon at the bottom of your HotBox ... and you will probably experience a performance increase as well!

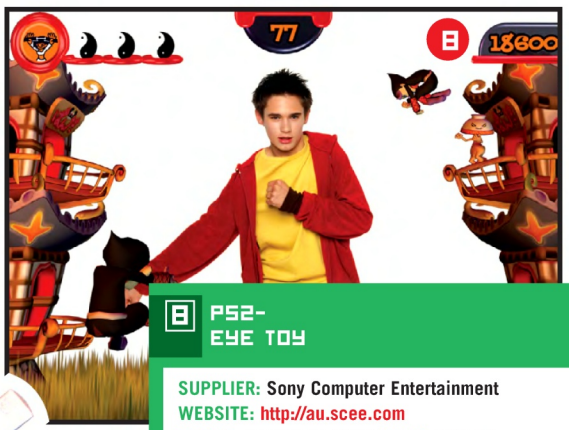
## 7 KABLEFLAGS

**SUPPLIER:** Kableflags
**WEBSITE:** www.kableflags.com.au
**PHONE:** 1800 889 426 **PRICE:** $11.95

It's annoying when someone pops out a power cord as it's usually powered on when that happens – respect thy Murphy's Law. To prevent this evil, you need to properly identify each cord. Bar masking tape and the wonderful glue it leaves behind, pre-labelled Kableflags do the job perfectly. With these pre-labelled kits, there are also two blank flags, though you might be after the DIY ten-flag kit. Available for many purposes, these small tags would be handy to have around.




EYE TOY™




## 8 PS2- EYE TOY

**SUPPLIER:** Sony Computer Entertainment
**WEBSITE:** http://au.scee.com
**PHONE:** (02) 9324 9500 **PRICE:** $99.95

Round up a group of friends and cancel any plans because the Eye Toy is the coolest add-on for the PS2. Plug the USB camera into your PlayStation and you're ready to go – on your TV screen – as the next Kung Fu master, World Boxing champ or even the best damn window washer in the country. Twelve easy to play games will have you and your friends laughing and jumping around for hours, not to mention it'll give you a full body workout!

# HOTBOX

## Project DR@G[o]N Case

### TECHNICAL DETAILS

- AMD Duron 1100MHz all in one board [m810 PC chips]
- 384MHz SDRAM
- 64MHz /TV out
- GeForce2 440
- RAID card
- Seagate 8.4GB drive
- Samsung 2.1GB drive, Samsung 1.6GB drive
- Maxtor 1.6GB drive
- Lite-On DVD player
- Diamond 32x CD Burner
- Home made 5x fanbus with LEDs
- Later added: Audio mod

Starting as a 'Beige AT Server', this case called out to me to mod it. It needed to be converted to ATX, so I removed the back panel plates, added an ATX one, and riveted the lot into place. I kept the old power supply.

I cut two 80mm fan holes at the back, 120 x 80mm at the top and two 120 x 80 mm at the front.

I wanted a window for my case using almost all the left panel. With the whole case being made of steel, normal cutting methods were going to take too long cost too much, so a friend offered to cut it out for me with a plasma cutter. The perspex went in, dried overnight and all was done.

I chose Gun Metal Metallics Flek Paint [Automotive] for the exterior and Blaze Red [Automotive] for the interior. After the final coats of paint, I used two cans of clear to add extra shine. Slowly but steadily (it took two-three months), I put it all together and voila! DR@G[o]N Case was born.

## Marco Enters The Matrix

### TECHNICAL DETAILS

- Athlon XP 2400+ @ 2.2GHz
- Gigabyte 7VAXP-ULTRA motherboard
- ASUS GeForce4 Ti4200
- 8x Video Suite G-Force 4
- 1GB DDR RAM
- Two 120GB Seagate 7,200rpm
- Lite-On 52x/24x CD-RW
- Sony DVD-ROM
- Vantec Fan Controller NXP-201
- Four Green LED Fans
- UV-rounded IDE and floppy cables
- Dual-blue bubble cold cathodes
- Three blue spotlights and UV cold cathode

Being a big fan of *The Matrix*, I thought it would be pretty cool to have a Matrix computer, so after selling my laptop, I went to work.

I had a few ideas but they all went straight into the garbage until my friend suggested having the Matrix symbols running down the sides. At first I thought this would be impossible, but then again, nothing's impossible! So I got to work – designing and cutting out the window and cutting each individual symbol and word out by hand to create a stencil. After many long hours of cutting and spray-painting, it was almost complete.

With the help of four cold cathodes (two blue, two green and UV), three small blue spotlights, some glow wire, (all self-wired to front switches) UV IDE and floppy cables, green UV tubing and paint on the insides and on the CPU Fan. The Matrix was born.

# Marcus' RogueHotbOx v2.0

**TECHNICAL DETAILS**

- Pentium III 1GHz
- 60GB Barracuda IV
- 512 PC133 Kingston
- SB Live! Digital Entertainment SE
- 5.1 Omni
- Pioneer DVD black non-gloss painted
- Lite-On 52x/24x/52x CD-RW
- ASUS V8440 GF4 Ti4400
- CrystalFontz USB632634 v2.0 blue/white
- Black Enermax
- Antec 80mm three colour fan (top)
- Sunon 80mm intake fan
- UV reactive paint on edge of card

After version one I made quite a few changes. I made the top window from thin Perspex and leftover moulding rubber, the idea is from Heavy Water Project.

Since recently going to SGL, I'd been thinking of buying an LCD screen, fortunately someone from the States was coming over so I got the USB Crystalfontz 4 x 20 blue/white.

It's really big – I cut a smaller window over two 5.25in bays joined together to mount the LCD to the frame with hot glue. The second bay was secured together with four pieces of wood. . . yes, I know, not too wise.

The glow-in-the-dark rhino is for making the inside of the case brighter, as it reacts really brightly with both UV cold cathodes.

I did everything in around six months. . . Hey I got exams too :P

# Tony's Integration Alumicoat

**TECHNICAL DETAILS**

- AMD Athlon XP 2800+
- Thermaltake Purepower 480W
- Soyo Dragon 2
- 1,024MB Mushkin DDR 3200
- Seagate 80GB Serial ATA
- Gainward FX 5600 128MB 8x
- Lite-On 16x DVD-ROM
- Lite-On 48x CD-RW
- Thermaltake volcano 11+
- HP PhotoSmart 7150
- Phillips 15in LCD
- Klipsch Promedia GMX-D 5.1 speakers.
- Windows XP

My aim was to design a fully integrated, stylish workstation that looked and felt as if it were made from a single piece.

The focus of attention – a desktop window – enables one to examine the inner bustle of the PC. In addition there is a soft touch keyboard and a aluminium-clad LCD flat panel monitor accompanied by a built-in Webcam.

Inline with the display the desktop porthole is situated, and the keyboard is stealthed into the front edging.

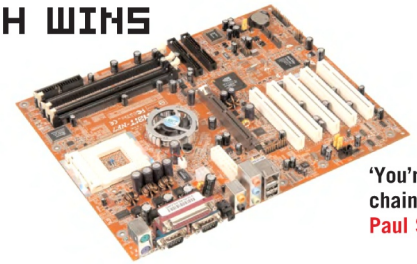
Other features to conclude this ensemble incorporate a fully-modded silver cloth chair which has arm rests that house a coffee cup holder and room to conceal 20 CDs.

The whole system boasts the sounds of 5.1 Dolby digital via Klipsch Promedia GMX-D speakers along with a HP photosmart 7150 printer.

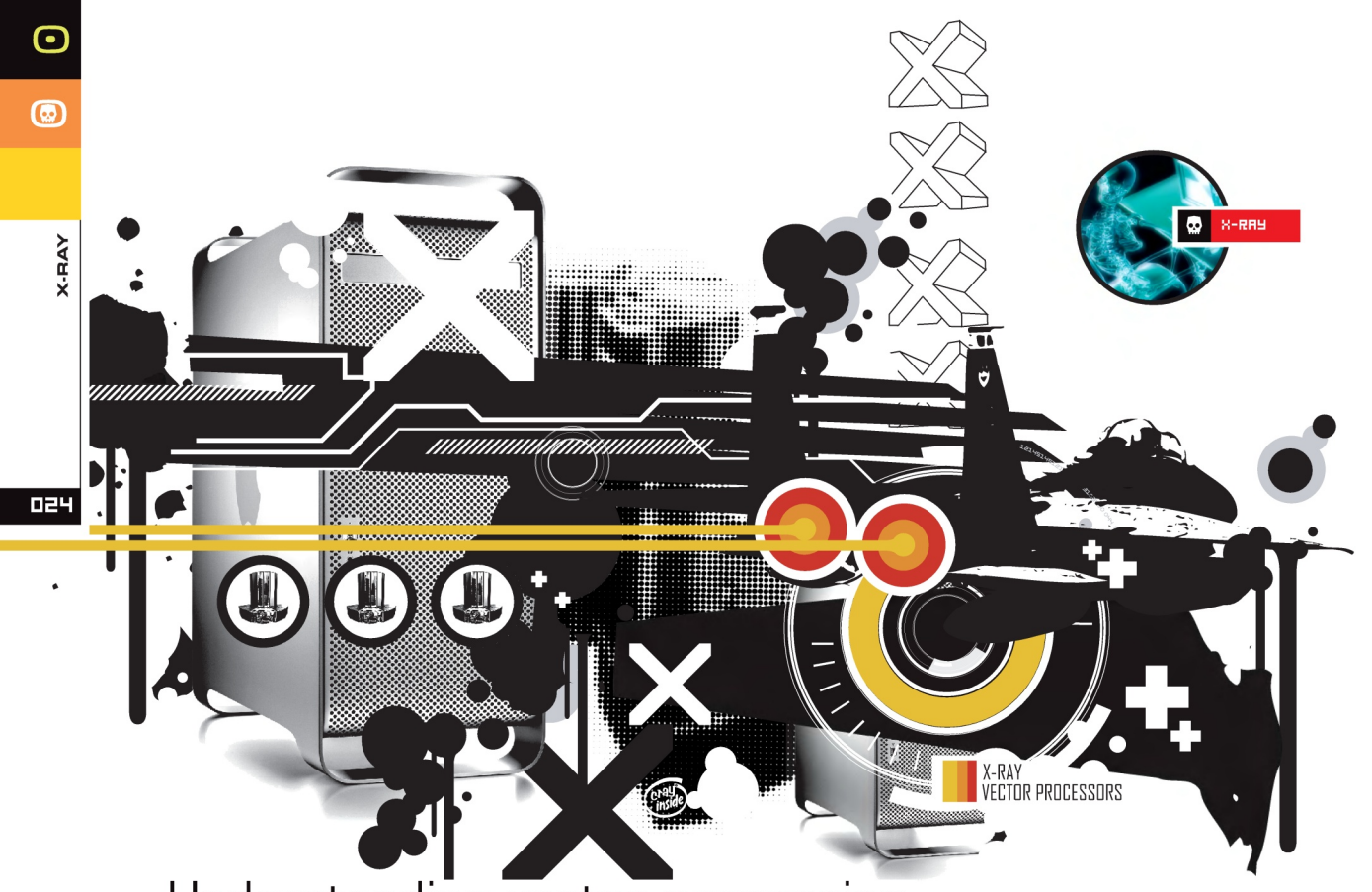
## HOT BOX OF THE MONTH WINS THE ABIT NF7-S V1.2!

**Vote for this month's hottest Hot Box at www.atomicmpc.com.au**
**Voting closes 15/10/2003**
**Send your Hot Box to hotbox@atomicmpc.com.au**

- NVIDIA nForce2 Ultra 400 chipset
- SATA RAID support
- Dual DDR400
- AGP8x
- IEEE1394
- 5.1 onboard sound + LAN



**'You're yankin' my chain - right?'**
**Paul Steed**




# Understanding vector processing

**Vector processing is often dismissed as a feature of old Cray number crunching supercomputers – useless today. Yet users of the short vector Altivec unit in Apple's G4 and G5 series aren't complaining. Dr Carlo Kopp explores the issue.**

The idea of vector processing dates back to the 1960s, a period which saw massive growth in the performance of mainframes used by industry. Analysing the performance limitations of then popular CISC style architectures, designers quickly found that operations on vectors and matrices were the most demanding problems to solve.

A vector is a mathematical construct which is central to linear algebra, which is the foundation of much of classical engineering/scientific mathematics – and 3D graphics. The simplest physical interpretation of a vector in 3D space is that it is an entity which is described by a magnitude and a direction. In a 3D space it can be described by three numbers, one for x, one for y and one for z. A vector [a b c] is said to have three elements, and is stored in memory as an array.

Just as real numbers (float, double) and integers (int, long) can be manipulated, so vectors can be manipulated, but the operations are quite different.

These are the simplest vector operations and vectors follow the distributive, associative and commutative laws, so many of the basic tricks in algebra also hold for vector arithmetic:

- Scaling – physically stretching or shrinking the length of the vector, is done by multiplying each element in the vector by the same scaling factor e.g. r*[a b c] == [ra rb rc].
- Addition – creating a new vector by parallelogram addition, is done by adding the respective first, second and third elements e.g. [a b c] + [d e f] == [a+d b+e c+f].

However, vectors have geometrical interpretations as well, yielding some unique operations:

- Dot products – a number physically representing the product of the length of two vectors multiplied by the cosine of the angle between them, performed by multiplying the respective elements and adding the products e.g. [a b c].[d e f] == ad + be + cf.
- Cross products – a vector perpendicular to two vectors, found by taking the differences of products of the elements e.g. [a b c]X[d e f] == [(bf-ce) (cd-af) (ae-bd)].

A large volume of mathematical theory has grown out of vector algebra and calculus – much is used in 3D graphics. We are interested in how to compute these efficiently.

Of particular interest are matrix operations, known in the trade as `matrix bashing'. Matrices provide very convenient ways of representing and solving systems of linear equations, or performing linear transformations (functions) on vectors (scaling and changing the direction of a vector) – both vital in 3D graphics and gaming.

Put simply, a matrix is a two-dimensional array of usually floating point numbers. Matrices can be added, multiplied or scaled, and given some caveats, obey the mathematical laws of association, commutation and distribution. What's important about operations between matrices is that they mostly involve

multiplications, additions or dot and cross products between rows and columns in the respective matrices.

Operations between rows and columns amount to primitive vector operations. Therefore inside the machine they can be represented with a single operation code (opcode) and one-dimensional arrays of operands.

Consider the choices we have in building hardware to compute, say, an addition between two vectors. On a conventional machine we must perform N individual operand loads into registers, N additions and N stores for two N sized vectors. Each load, addition and store incurs an opcode fetch cycle and all of the heartache of shuffling the operands around in the CPU.

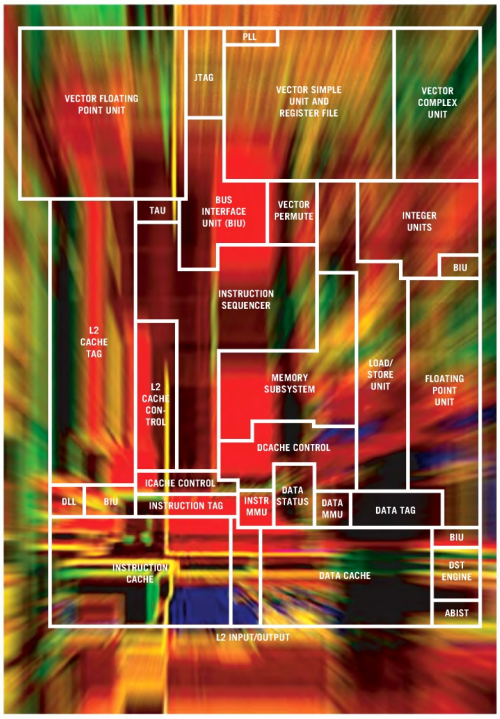
The alternative is to add an instruction into the machine which says `ADD, N, A, B, C', or add N element vectors A and B and store the result into vector C, where operands A, B and C are pointers to the memory addresses of arrays A, B and C. Doing it this way achieves several desirable things – we use only one opcode no matter how big N is, thereby saving a lot of bus bandwidth and decoder time, and we end up with a repetitive run of identical operations, here loads, adds and stores, which means that in a pipelined (/superscalar) CPU we get a run of operations without unwanted stalls. The bigger the length of the vector, usually, the better.

This is the central idea behind vector processors and why they can achieve better performance than conventional architectures.

To get genuinely blinding improvements in speed, it is necessary to optimise the architecture. This amounts to organising the storage in a manner which makes it easy to quickly load and store array operands. In other terms, the bandwidth between the CPU and main memory must be maximised, and also the bandwidths between operands and execution units in the CPU must be maximised.

Various techniques exist to achieve this. The brute force approach is to put a very wide and fast bus between the main memory and the CPU, and use the fastest RAM you can buy, but this is all at a high cost.

The cheaper approach, used in the Cray 1 and early CDC machines, is to put a very large block of very fast `scratch-pad' memory into the CPU as a vector operand register bank (file), or `vector registers'. Since the preferred format of vector instructions uses three operands, two sources and one destination for the result, this register bank is split into three or more parts.




**ABOVE: The Altivec vector unit in the PowerPC chips is optimised for graphics and signal processing. The vector processing demand in terms of sheer hardware is visible on this architecture diagram of the G4 PowerPC chip. The very modest vector unit occupies around one third of the die. In the long run, vector processing is viable for most top-end microprocessors since transistor counts of hundreds of millions will allow the register and arithmetic hardware to fit without penalising other key parts of the architecture.**

To execute a vector instruction with an vector length which fits into the vector register bank, the two source operand arrays are sucked into the registers. Then the execution unit grinds its way through the instruction, leaving the result vector in the reserved area of vector register bank.

This works wonderfully until the vector length is larger than the vector register array length. At that point, the CPU has to chop the operation into multiple passes, since it can only work through a single register bank's worth of operands at a time. So it will go through a load cycle, vector compute cycle, store cycle, then another load cycle, etc, repeating this process until the whole vector is completed. Every time the CPU has to do an intermediate store and load of the vector register bank, the execution unit is idling and no work gets done. This is the classical `fragmentation' problem, since every time the vector overruns a multiple of the register size, the cost of a load/store cycle for the whole register array is incurred.

My favourite illustration of this is the famous `sawtooth' curve of Cray 1 MegaFLOPS performance versus the dimensions of two matrices being multiplied – the 64 deep Cray 1 sees performance dip from its peak of 132 MFLOPS every time a multiple of 64 is crossed. The only fix is bigger register banks – at a price.

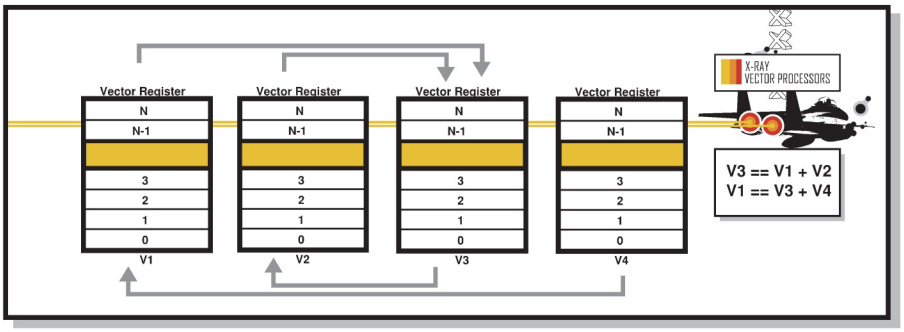
## INCREASING PERFORMANCE BY CHAINING

Clearly the big performance killer in such a vector processor is the need to reload the vector register banks with operands. Often a trick termed `chaining' can be used to beat this.

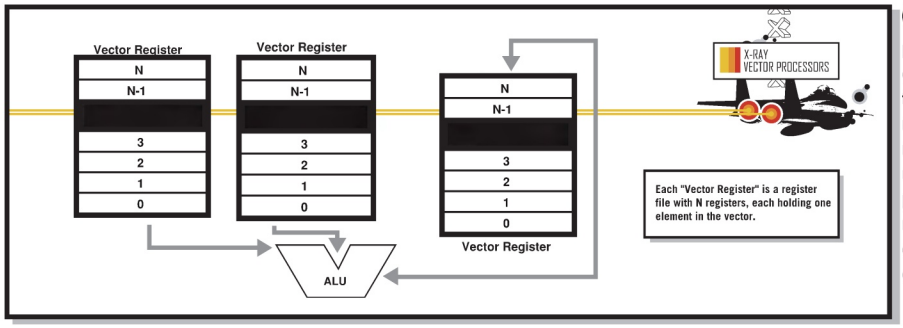
Consider that you are manipulating a vector, and then manipulating the resulting vector, and so on, and the vector fits inside a vector register array. What this means is that the result vector, from one vector instruction, becomes one of the input operands for the subsequent vector instruction. Why waste time storing it out into memory and then loading it back into the CPU?

Chaining involves managing the use of the vector register arrays to minimise the number of load-store cycles on vector operands. A three vector operand instruction set (opcode, source1, source2, result) requires three vector register arrays – any additional vector register arrays above this facilitate chaining. The venerable Cray 1 used four.

If your CPU uses chaining, then it is feasible to load a vector register array with a vector operand for a subsequent instruction, while the execution units are busily crunching




**RIGHT:** Chaining is a technique used to improve the performance of vector arithmetic. Chaining requires at least four vector registers. Two registers are being used to feed the ALU with operands, the third is being filled with the result of the calculation, while the fourth is being loaded up with the operand for next vector instruction.




**LEFT:** The cost of vector processing is largely a result of the many registers required to build up each `vector register'. In effect each vector register is a register file not unlike that found in a general purpose CPU. A typical vector register may contain 64 32-bit or 64-bit registers, each containing an operand.

away doing the current instruction. Once it has finished that vector instruction, it starts the next with the two operands already waiting to go. If the next vector instruction can also be chained, then its vector operand can again be loaded into the unused fourth vector register.

## INCREASING PERFORMANCE IN LOOPS

Value for money in vector processing depends very much upon the problem you are trying to solve, the compiler you have, and the idiosyncrasies of the vector hardware on your machine.

If your purpose in life is to deal with the `classical supercomputing' problems which involve mostly large matrix operations, then vector processors like Crays are the best approach. The basic problem lets the machine be driven to its best.

In practice, most problems involve a mix of scalar and vector computations. However, even in solving a scalar problem the vector hardware can be exploited. Instruction Level Parallelism (ILP) is used in conventional superscalar processors to concurrently execute instructions with no mutual dependencies.

This idea can be frequently exploited in a vector processor. Imagine a loop with a large number of passes in which several computations have no mutual dependency – what is computed in one pass through the loop in no way affects any other pass. With a vector processor your compiler can cleverly arrange to compute all of these instructions on the vector unit, rather than as consecutive passes through the scalar unit. This technique for parallelising loops when possible is usually credited to the original Cray Fortran compiler.

## VECTOR PROCESSING PRODUCTS

The most famous and least affordable vector processors in the market were Seymour Cray's machines. Cray was a senior supercomputing mainframe architect at Control Data Corporation (CDC), which dominated the scientific supercomputing market of the mid to late-sixties. Cray departed CDC and set up his own shop. His first machine – the Cray 1 – proved to be a stunning success in the market. A feature of early Crays was the use of a very fast bus, and a circular machine layout around what amounted to a backplane wrapped around a cylinder to maximise speed. The Cray product line lives on even though Seymour is no longer with us.

Of more interest are the vector-oriented SIMD units in the G4/G5 PowerMACs. The G4's MPC7400 chip is indeed a genuine vector processing machine, with a PowerPC superscalar core extended with a `short vector' co-processor and additional AltiVec vector instructions. The original G4 AltiVec vector hardware was optimised for graphics and signal processing applications occupying almost one third of the G4 die. The vector unit is 128 bits wide, and can operate on vector sizes of 4 with single precision floating point operands, or 8 with 16-bit integers, or 16 with 8-bit operands. The vector register file has 32 128-bit entries, which can be accessed as 8, 16 or 32 bit operands, equivalent to one quarter of the original Cray 1. No less than 162 AltiVec instructions are available in the machine instruction set.

The AltiVec hardware is not intended to fill the Cray-like niche of heavy weight engineering/scientific work, but it is well sized to deliver in its niche of graphics, multimedia and signal processing.

When the G4 was released, Apple's performance claims that `a 500MHz G4 is 2.2 times faster than an 800MHz P-III' actually referred to operations such as Fast Fourirer Transforms, convolutions, Finite Impulse Response filters, dot products and array multiplications, with a peak performance gain of 5.83 times for, surprise, surprise, a 32-tap convolution operation on a 1,024-element array.

From an architect's viewpoint, the G4/G5 AltiVec shows that it is now becoming feasible to pack the architectural equivalent of a Cray 1 on to a single die. Anybody care for a desktop 4.2GHz `Crayette'?

www.asus.com

# Home Networking Starts Here!

Wi-Fi™ @HOME

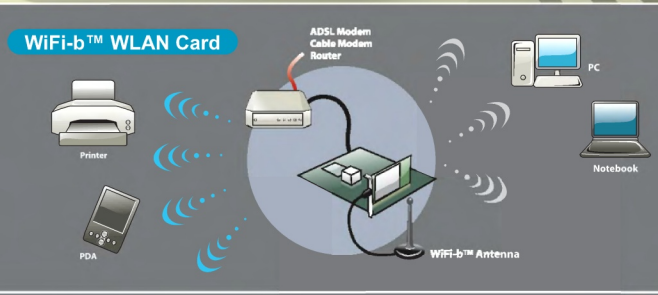
## WiFi-b™ WLAN Card

- 11 Mbps 802.11b Wireless LAN
- Wireless Internet Access Sharing
- Hassle-Free Home Network
- Free Software AP (under WinXP only)
- Easy Setup Wizard

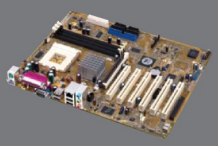
## Home Networking Starts Here!

ASUS Wi-Fi@HOME™, as the name suggests, is the latest platform specifically designed to simplify the process of building a wireless home network. In short, the goal of ASUS Wi-Fi@HOME™ is to enable reliable wireless data transfer through the 802.11b standard, easy Internet access sharing, and simple setup at an affordable price.

This new platform includes three elements: ASUS motherboards with the Wi-Fi slot, the WiFi-b™ add-on card and ASUS Software AP (under WinXP only).




### A7V600



- Socket A for AMD Athlon XP
- VIA KT600/8237 Chipset
- FSB 400/DDR 400
- AGP 8X
- Gigabit LAN (AI NET)
- 2 x SATA with RAID 0,1
- 6-channel audio with S/PDIF digital out
- 8 x USB 2.0

### Model List with Wi-Fi slot

P4C800 Deluxe, P4C800, P4C800-E, P4P800 Deluxe, P4C800-E, P4P800, P4P8X, P4P800S-E, P4P800S, P4S800, P4S800D, P4V800D, A7V600, K8V.
Visit www.asus.com for an updated list.

Product specifications may not be exactly as shown. Please confirm specifications with your dealer prior to purchase.
The specifications are subject to changes without notice.

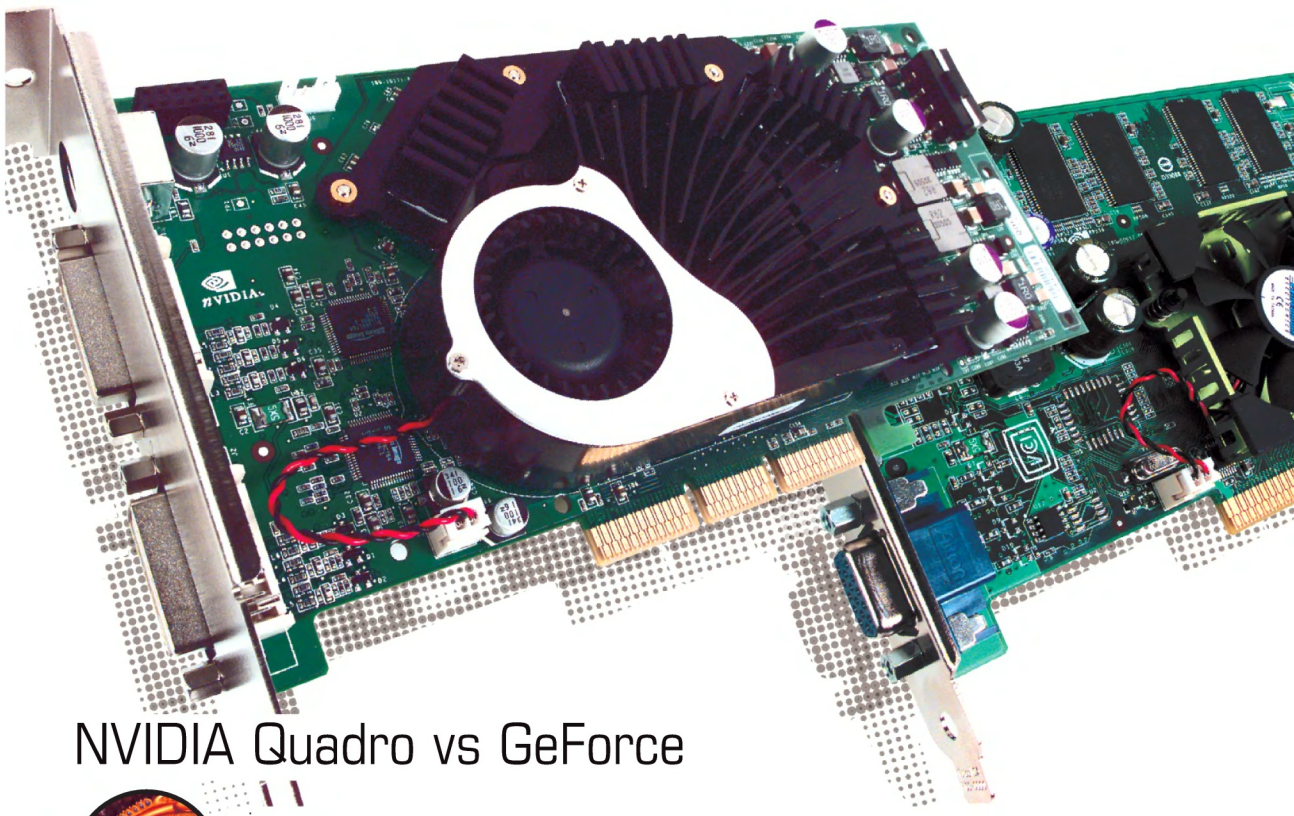
ACHIEVA
Achieva Technology Australia
Tel: 02-9742-3288
www.achieva.com.au

cassaaustralia
Cassa Australia
Tel: 07-3256-1999
www.cassa.com.au

INGRAM MICRO
Ingram Micro
Tel: 1-300-65-33-33
www.ingrammicro.com.au

SYNNEX
Synnex Australia
Tel: 1300 880 038
www.synnex.com.au

ASUS®
HEART OF TECHNOLOGY



# NVIDIA Quadro vs GeForce

**NVIDIA's latest release shows Ivon Smith the company still knows what it's doing at both ends of the workstation graphics card market.**

## THE NEW GPU LINEUP

After NVIDIA ramped up its GPU line by moving on from the FX5800 to the 5900, it was only a matter of time before these changes made their way into the professional graphics card line of products. Hence the stunning 128MB Quadro FX2000 has recently been shunted down NVIDIA's hierarchy of uber-cards, humbling itself to the new 256MB Quadro FX3000, (based on the later and greater FX5900 GPU), which will undoubtedly be a serious contender for the workstation graphics card champion over coming months as the other manufacturers release their own updated high-end products.

Although NVIDIA, with this latest release, are taking on the world again, challenging the boundaries of what's possible in terms of 3D application display features and OpenGL (or even DirectX) speed and performance in 3D design work, they haven't forgotten the *little guy* who perhaps doesn't have the need or budget to purchase a four or five thousand dollar graphics card.

## THE IMPORTANT FACTORS ARE?

### Hardware

When it comes to *working* with 3D models and animation and purchasing a graphics card for design, TV, film, game development or industrial visualisation, a key word is practicality. Does the card work reliably, stably and have the display quality and performance in your chosen applications for you to be able to be productively creative and have the turnaround on 3D jobs that you (or your employers) want?

Obviously, a key factor in this criteria is the hardware architecture. Memory size, memory clock speed and core GPU clock speed are three of the most powerful influences over general card performance. The larger the memory, the larger the polygon count and texture maps on models that can be moved around at the speed that the RAM can push it. Vertex processing engines and caching dictate how easily large geometry models can be worked with, and the number and speed of pixel pipelines is important when it comes to texture handling within 3D applications as well many of the newer lighting and realtime material effects available now for designers and artists.

### Software

Much of the latest hardware evolution has had to be developed in close conjunction with the software language and driver codes. NVIDIA have been a leading developer in this area, working closely with Microsoft on the progression of DirectX implementation and support within their graphics cards. OpenGL coding is of prime importance to workstation cards as the majority of 3D applications achieve most of their high

performance results when geared towards OpenGL drivers rather than DirectX. This is partly because the development and design process involves much 3D work in simple texture-absent shaded display mode, or even 'simple' wireframe mode, essential when trying to create accurate industrial models of mechanical devices, engines, vehicles (CAD) or when creating and editing organic looking 3D models of faces, heads and character bodies in the world of TV or film entertainment (DCC).

Game developers do need to be able to utilise the most accurate and advanced DirectX display features to best visualise immediately what their target audiences are going to see when the full-blown version of a game is played, likely using the consumer versions of the workstation graphics cards. Supplementary to this is the development and integration of NVIDIA's own Cg graphics language, which enhances both OpenGL and DirectX display modes when working in 3D applications.

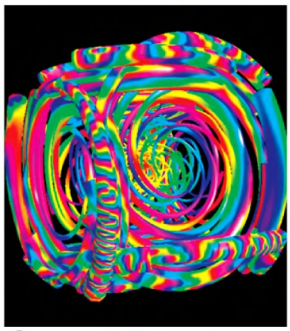
Leading 3D software developers, such as AVID have worked with NVIDIA to enable the use of Cg within their high-end non-linear 3D animation production application *Softimage|XSI*. Advanced texture and shader formats are allowing game developers to plug their game engine directly into *XSI* to display almost exactly what the PC or console platform user will see in terms of lighting, shaders and effects within the 3D viewports of *Softimage|XSI*. Not only is this just cool for the clients and 3D artists working on a game title, but it really speeds and improves the production process, cutting down the necessity to export models, scenes or animations to try out in the game engine. This WYSIWYG approach to game creation has largely been made possible via the advanced coding languages that are implemented on today's workstation graphics cards.

So, hardware and advanced coding languages on workstation cards allow performance and special features to be used. The other and vitally important part of workstation 3D card design, is the development of drivers. Well-written and reliable drivers can be the key to really unlock the ultimate performance from both consumer and professional 3D graphics cards. In fact it is this, rather than radically different hardware architecture, that is often attributed to the vast chasm between investment costs of the top-of-the-line games cards compared to workstation cards. Pricing is typically 300-500% greater for the equivalent model GPU workstation card.

Is this justified in terms of real world reliability, performance and feature sets available on these professional cards or are these price hikes more likely influenced by the marketplace? It's true that the 3D industry sector has larger and more expendable resources of cash than your (*not so*) average Joe Blow gaming fanatic to throw after 3D accelerator hardware, and that they are chasing return capital on their investments, but surely the manufacturers haven't just been exploiting this factor for so long, have they?

## A MENTION OF MARKETING VS. MARKET READINESS

We would never deny that to date NVIDIA have produced some fantastic 3D graphics products, both in terms of hardware and GPU development as well as software and driver production pipelines. They broke the mould years ago with their GeForce 256 gaming card and then bravely ventured into the more aloof and particular workstation market, and their line of Quadro cards has always been successful and truly powerful within the 3D production environment. However, one thing that has managed to keep pace with their famous and voracious development cycles is their marketing machine. It would seem that in a bid to retain their marketplace image, in the face of stiff competition from new products by ATI and 3dlabs, NVIDIA has pushed out their new workstation hardware before proper and full software support has been finalised.



**ABOVE: A scientific particle-based fluid flow visualisation test used for data analysis and the 3D display represents flow tracking with coloured tubes based on particle velocity.**

Both the Quadro cards used in these tests were completely unable to run on the now familiar, reliable and high-performing certified 3dsmax v.4.3.03 and *MaxTreme* v.4.00.29 drivers. With previous workstation cards, these drivers, created alongside the 3D software developers, invariably produced performance results in tests and general working environments that were 25-30% faster. To get the FX500 and 3000 cards to even function, the generic Quadro drivers v.44.71 had to be used, which may produce a few slightly miffed professionals out there who invest in these new products expecting great leaps and bounds in performance and dedicated driver sets within their 3D production software of choice. Admittedly, these are brand new products, drivers will undoubtedly become available *soonish* and NVIDIA have actually done a damned good job of making a couple of well performing and balanced workstation cards! But for those of us who, daily, rely on such products to perform and be reliable to the ever-improving levels that we have come to expect from the likes of NVIDIA and ATI it's a bit of a glitch in their product release process that perhaps can be attributed more to their marketing machine than their obviously well-competent engineers!

We know we am not alone in eagerly looking forward to the release of reliable, certified, application-specific driver sets for the newer Quadro range of workstation cards, since the taster that we have had so far implies that these cards are going to be prolific as industry leading 3D production tools.

### The graphics card tests

For this review of the new 'entry-level' Quadro FX500 workstation card I have asked the questions: 'Can't all decent GPU based graphics cards be used in professional 3D design and animation affectively? Is there really any difference between workstation and gaming card performance within the 3D application environment? And surely the price differences between the two can't be justified?'

This trial of the Quadro FX500 involved a mid-range graphics workstation (specifications below), industry standard and custom-built real world 3D application benchmark tests, the latest sets of drivers, leading 3D modelling and animation application 3dsmax5.1 SP1, a couple of the latest games cards from NVIDIA and one of their top-of-the-line Quadro FX3000 workstation cards to provide comparative evidence to try and answer our questions above, and an overall observational appraisal of these cards' performance and behaviour in a real 3D production environment.

## THE RESULTS

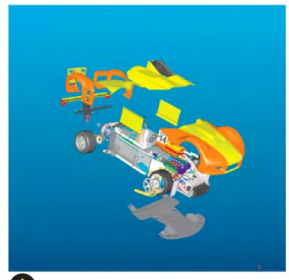
### Quadro FX500

This card is marketed as the latest 'entry-level' workstation product from NVIDIA, and it has a price point to match this, when compared to the upper-level cards, the FX2000, FX3000 and FX3000G. Having said that, it does boast a host of supported hardware and integrated software features that will be welcomed by those working in the 3D industry whose investment per workstation is a little more modest than ILM's would be!

Using the (*ho-hum*) generic Quadro drivers gave a fairly smooth workflow inside 3dsmax as well as in the general Windows environment. DirectX performance was not what we would call lightning fast, but running OpenGL within max gave fair, if modest responsiveness, and the FX500 seemed happy moving tens of thousands of polygons (and more) around without busting a gut.

The SpecViewPerf results for this 'entry-level' workstation card are pretty good compared to the games cards, coming second only to the FX3000 in virtually all the tests. This would imply that the FX500 may be a reasonable entry-level investment for a host of different industry 3D applications, including not-too-ambitious industrial design, since much of SpecViewPerf is based on these types of applications.

In the 3dsmax 5.1 viewport animation tests, the results are not so good. The FX500 came last or second last in all the tests, showing that viewport animation performance has not been optimised as much as it could have been, likely due to the non-certified generic Quadro drivers. Interestingly, actually working within max gave a more promising feel of this card's performance than these results would indicate. And in actual fact, allowing for a possible 10-30% performance increase with dedicated drivers (a reasonable expectation), the FX500 would have beaten both the games cards in nearly all of these tests.



**ABOVE: A real world solid modelling test set in which first a car, then a photocopier 3D assembly model is spun in various display modes.**

### Quadro FX3000

Well, apart from our little gripe about non-specialised drivers, what can we say about this card? Big, beefy, powerful, undeniably fast in all the tests, and an incredible performer when working in 3dsmax. It can throw huge scenes, hundreds of thousands of polygons, hefty texture maps, multiple fully rigged and animated characters around like rag dolls! (– no pun intended*).

It *could* be faster, (so could a Ferrari), and with the (hopefully) imminent release of new drivers, it could be just the way these cards are *meant* to be. . . *insanely* speedy performers! SpecViewPerf results speak for themselves. Compared to others (especially the games cards), insane performance, simply insane!

The 3dsmax tests show exactly what games cards are actually good at (duh, apart from playing games!). The viewport animations where the FX3000 is not light-years ahead, and even gets beaten by the games cards, are the low poly-count, detailed texture mapped, shaded tests. All these tests replicate, after a fashion, what goes on in a 3D game. Games developers design this way – games cards are optimised for it. Makes sense really. However, wherever wireframe display is used, or the poly-count is really high, the FX3000 stamps all over the competition. And again, driver improvement would pretty much secure the FX3000's crown.

**Ragdoll is a new character dynamics construction system coming from Havok that will be included in the upcoming 3dsmax v.6.0 release.*

### GeForce FX5900Ultra

Not so impressed with this card, as we would have thought, given all the hype surrounding its launch. Obviously, as a games card, it'll do that job well, perhaps really well? But for around about a thousand bucks, we did not find *working* with this card particularly good in 3dsmax. It doesn't have the polygon pushing power of either of the Quadro cards and once you start upping the ante with bigger models it starts jumping and then proves itself to be just a fast games card. A professional workstation card it is not.

SpecViewPerf results mirror this with nothing special in the performance area, managing to just beat the FX500 in only one of the tests (the 3dsmax test).

In the 'games-like' 3dsmax tests it does OK, but nothing that the cheaper FX5600 doesn't do. Polygons and wireframes cause this card to stutter somewhat. If production turnover depends on it, and you have at least $1,000 to spend, we would look elsewhere and perhaps spend a bit more to get a dedicated workstation card.

### GeForce FX5600

Obviously, in these tests, this card reaffirms that the cost of dedicated workstation cards is justified because they actually do perform an appreciable amount better in their intended environment. However, given the price, the SpecViewPerf and 3dsmax results, we found ourselves dubbing the FX5600 *The Little Card That Could*. It neared the 5900Ultra results in many of these workstation oriented tests, and working in 3dsmax was not as bad as one might think given it is a mid-range games card. If you really had to use a games card for 3D work, and were very price-conscious, it might even make sense to go with one of these rather than shell-out for the top model, since the performance is really not that much better.

### Conclusions

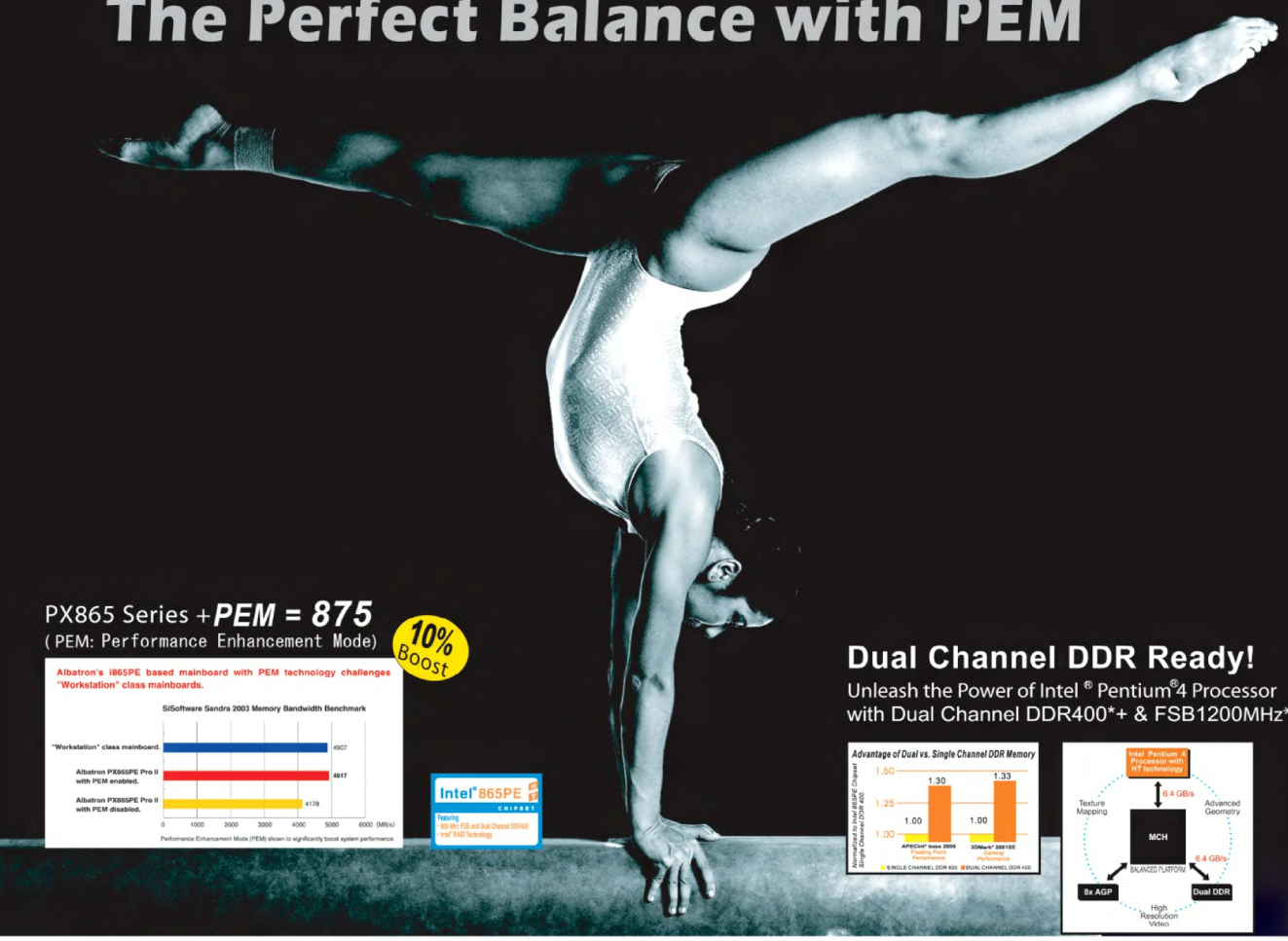
The Quadro FX500 performs nicely for its price and intended level in the marketplace, and definitely compared to workstation pretenders, the GeForce FX range of games cards. For a cheap, entry-level 3D workstation card, the FX500 seems worth it. Do not get this card expecting massive models and huge 3D scenes to cower at your feet though. For this, you have to spend a bit more, up into the realms of the FX2000 and FX3000.

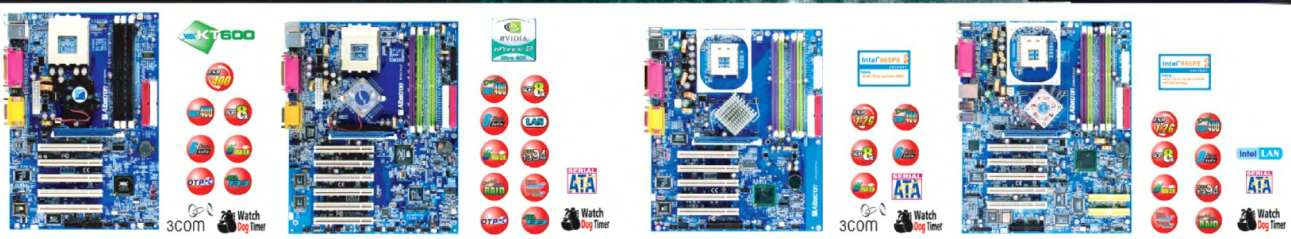
**Test workstation specs:**

AMD XP2400+, 1GB 266DDR RAM, Gigabyte KT400 Mobo, AGP8x, FSB333MHz, 120GB 7200rpm Western Digital HDD,NVIDIA Quadro FX500 (128MB) and FX3000 (256MB) workstation graphics cardsNVIDIA GeForce FX5600 (128MB) and FX5900Ultra (256MB) gaming graphics cards,NVIDIA generic Quadro drivers v.44.71 (FX500 and FX3000), NVIDIA Detonator drivers v.45.23, Windows 2000 SP3 (never use SP4 with 3dsmax), DX9.0b, 1,280 x 1,024 x 32-bit,discreet 3dsmax5.1 SP1, SpecViewPerf v.7.1

Albatron

# The Perfect Balance with PEM


PX865 Series +PEM = 875
( PEM: Performance Enhancement Mode)
10% Boost
Albatron's i865PE based mainboard with PEM technology challenges "Workstation" class mainboards.
SiSoftware Sandra 2003 Memory Bandwidth Benchmark
"Workstation" class mainboard. 4907
Albatron PX865PE Pro II with PEM enabled. 4917
Albatron PX865PE Pro II with PEM disabled. 4178
0 1000 2000 3000 4000 5000 6000 (MB/s)
Performance Enhancement Mode (PEM) shown to significantly boost system performance.
Intel® 865PE CHIPSET
Featuring
- 800 MHz FSB and Dual Channel DDR400
- Intel® RAID Technology
Dual Channel DDR Ready!
Unleash the Power of Intel ® Pentium®4 Processor with Dual Channel DDR400*+ & FSB1200MHz*+
Advantage of Dual vs. Single Channel DDR Memory
Normalized to Intel 865PE Chipset Single Channel DDR 400
1.50
1.25
1.00
1.00
1.30
1.00
1.33
APECiet® base 2000 Floating Point Performance
3DMark® 2001SE Gaming Performance
SINGLE CHANNEL DDR 400
DUAL CHANNEL DDR 400
Intel Pentium 4 Processor with HT technology
6.4 GB/s
Texture Mapping
Advanced Geometry
MCH
BALANCED PLATFORM
6.4 GB/s
8x AGP
Dual DDR
High Resolution Video




### *KX600 Pro* (VIA KT600 + 8237)

- Support AMD Athlon XP/ Duron /Barton Processor
- Socket A with FSB 200/266/333/400 Mhz
- Support DDR 266/333/400 Memory
- Build-In 3Com 10/100 Mbps Ethernet LAN
- Support 8X AGP Graphic Accelerator
- Support ATA133 Hard Disk Drive
- Build-In 6 Channel AC97 Sound, SPDIF In-Out
- Support 6x USB 2.0 / 1.1 Ports

### *KX18D Pro II* (nForce2 Ultra 400/ MCP-Turbo)

- Support AMD Athlon XP/ Duron /Barton Processor
- Dual Channel DDR 400+ Memory
- Support 8X AGP Graphic Accelerator
- Build-In Force2 MCP-T 10/100 Mbps Ethernet LAN
- Support ATA133/ Serial ATA Hard Disk Drive
- Support Serial ATA RAID 0,1 Functions
- Build-In 6 Channel AC97 Sound, SPDIF In-Out
- Support 6 USB 2.0 / 2 IEEE 1394 Fire Wire Ports
- Support Hyper Transport Technology
- Build-In BIOS Mirror / Voice Genie

HOT atomic MAXIMUM HOBBY COMPUTING
KM18G Pro Wins Atomic "Hot Award" Aug. 2003

### *PX865PE Pro* (Intel® 865PE/ ICH5)

- Support Intel® Pentium® 4 Porcessor
- Socket 478 with FSB 800/1200+* Mhz
- Support Dual Channel DDR400+ Memory
- Support 8X AGP Graphic Accelerator
- Build-In 3Com 10/100 Mbps Ethernet LAN
- Support ATA100/Serial ATA HDD
- Build-In 6 Channel AC97 Sound, SPDIF In-Out
- Support 6x USB 2.0/1.1 Ports
- Support Hyper-Threading Technology (HT)
- Support Performance Enhancement Mode (PEM)

### *PX865PE Pro II* (Intel® 865PE/ ICH5R)

- Support Intel ®Pentium ® 4 Porcessor
- Socket 478 with FSB 800/1200+* Mhz
- Support Dual Channel DDR400+ Memory
- Support 8X AGP Graphic Accelerator
- Build-In Intel ® 1Gbit Ethernet LAN
- Support ATA133 HDD with RAID 0,1 Functions
- Support Serial ATA HDD with RAID 0,1 Functions
- Bulid-In 8 Channel AC97 Sound, SPDIF In-Ou
- Support 6x USB 2.0 / 2x IEEE 1394 Fire Wire Ports
- Support Hyper-Threading Technology (HT)
- Support Performance Enhancement Mode (PEM)
- Build-In BIOS Mirror / Voice Genie

**Australian Distributor**

ami COMPUTER SERVICES
www.ami-computers.com

**QLD OFFICE**
6 / 128 Compton Road
Underwood QLD 4119
Tel : 07 3808-9255
sales@ami-computers.com

**NSW OFFICE**
35/159 Arthur Street
Homebush West NSW 2140
Tel : 02 9763-2122
nsw@ami-computers.com

**VIC OFFICE**
74 Portman Street
Oakleigh VIC 3166
Tel : 03 9563-3389
vic@ami-computers.com

Computex Taipei 2003
Sep.22-26

TAIWAN 2003 SYMBOL OF EXCELLENCE WINNER

Albatron
www.albatron.com.tw

Soar to Success

# Aquamark 3

**With 3DMark03 weathering a storm of controversy, James Wang discovers a new DirectX 9.0 benchmarking hope deep beneath the ocean waves.**

For better or for worse, 3DMark is now an entrenched part of 3D benchmarking. Some people like it for its pretty pictures, some enjoy watching the demos, while others simply want that magic number at the end. In any case, it has reigned undisputed as the industry standard 3D benchmark, until now. Sure, there have always been other alternatives available: GameGauge, VillageMark and Codecreatures are all well known, but none offered any tangible threat to 3DMark. The exclusive preview we are about to present to you represents possibly the first – Massive Development's 'Aquamark 3'.

## KRASS - MADE IN GERMANY

Whereas 3DMark was designed based on the philosophy of combining synthetic and real world tests, Aquamark 3 concentrates purely on in-game testing. The krass graphics engine has been used in-house at JoWood productions (owner of Massive Development) for many years. With each technology leap, the krass engine has always been at the frontier of 3D. It was the first engine to claim DirectX8 compliance in 2001 and the game using this technology, AquaNox, was also the first DX8 title released worldwide. Aquamark 2 was also one of the most elusive benchmarks around. Shown behind doors to showcase the power of NVIDIA's GeForce 3, it was one of the first demos to utilise pixel shading models. Now, in 2003 and the era of DX9.0, krass has been fully boosted to take advantage of conditional shaders, high precision colour and advanced physics. Like all the fine technology we've previewed recently, krass utilise the DX9.0 Higher Level Shading Language (HLSL) to produce fast and efficient code.

When it comes to shaders, people love comparing numbers. 'How long is yours?' as if it's a testament of one's manhood. Which version is yours? What's the precision? How many registers does it use? At the end of the day, even the savviest 3D geek is not sure which measurement matters. Refreshingly, Aquamark 3 has taken a most sensible path in measuring shader performance. Real world fillrate still holds the key (which is good), along with some other interesting tests which will expose what's beneath the skin of 3D rendering.

Recall that shaders are merely descriptions of real world materials (*Atomic 32*, scanner). If a scene contains only a bare room, then only the brick shader would matter and hence there will only be one shader at work. Using a

sensible solution like multi-texturing, the brick shader would be fairly simple. If the whole scene was instead replaced with water, then the number of shaders remains at one, but the complexity (number of instructions in the shader) has jumped dramatically. One can think of the number of shaders used as a measure of how many different types of materials are simulated while the complexity of the shader as an indication of how difficult this material is to model.

During the making of Aquamark 3, the developers realised that the number of shaders used bore little relevance to performance, but rather which shaders took up the majority of the scene space was the dominating factor. For example, if you implemented extremely complex shaders for killer piranhas but only a handful of them swam in the distance, the amount of pixels they account for is perhaps only 10 percent of the frame. With this in mind, Aquamark 3 uses a special measuring technique that only counts the pixels which contribute to the final framebuffer. In other words, pixels that are removed, culled or hidden will not be accounted for. It's good to see Aquamark 3's emphasis on actual output over theoretical prowess.

## MEET INGO

With such high emphasis of efficient shaders, wouldn't it be natural to write all shaders in HLSL? Not so according to Ingo Frick, co-founder and technical director at Massive Development. 'HLSL implementations are not used for all shaders. There are still a substantial number of shaders being implemented traditionally, i.e. by assembly language or even by the classical texture stage combiner concept,' he says. The fact remains, for certain tasks, using shaders is simply overkill. Most of the objects and materials in today's rendering system tend to be simple, 'In AquaMark3, the number of pixels generated with ps2.0 shaders cover approximately 30% of the screen space. If you consider the total number of pixels rendered in the benchmark, only 10% are rendered with a ps2.0 shader.' Don't fret if you don't have ps2.0 hardware, fallback shaders have also been implemented which achieve the same effect with multiple passes but less precision. Wrapping off this topic, we ask Ingo what shaders are easy to write yet profound in impact: 'The most easy to write yet beautiful shaders implement improved illumination models on a per pixel basis rather than on a per vertex basis. These models allow a more realistic material rendering than before and all this [works] in conjunction with novel shadow generation methods for soft shadows under extended and multiple light sources.' He sure hit the right spot – just about every FPS under development is pushing this rendering model. Ingo concludes by reiterating the fundamental shift to away from classic fillrate, 'the number of pixels will not be the limiting factor in future rendering process, but the complexity of the pixel shader behind each pixel.'

Since the arrival of DX9.0, higher precision colour has gone through fuelled debate in the online community. While more precision is most definitely useful, it is only beneficial if used with the right shader. Simple shaders will produce identical results for integer or floating point colour while some Renderman shaders will not tolerate anything less than full 32-bit floating point (FP128). Aquamark 3 uses the whole range from FP64 to FP128 but the results do not depend on specific FP precision. It simply means that if your hardware supports higher precision, it will have enhanced colour accuracy, but lower-end gear can still get by.

When we speak about code optimisation, Ingo also has positive comments for Microsoft's HLSL compiler, 'From our experience it [HLSL compiler] produces short and efficient code which seems to work well on every type of hardware without the need for specific code paths.' In fact, without some intimate knowledge of the underlying hardware, it is hard to beat the compiled code, 'With its pipeline-oriented approach and the relatively small instruction set, the compilers find preconditions which allow for highly optimised code generation'.

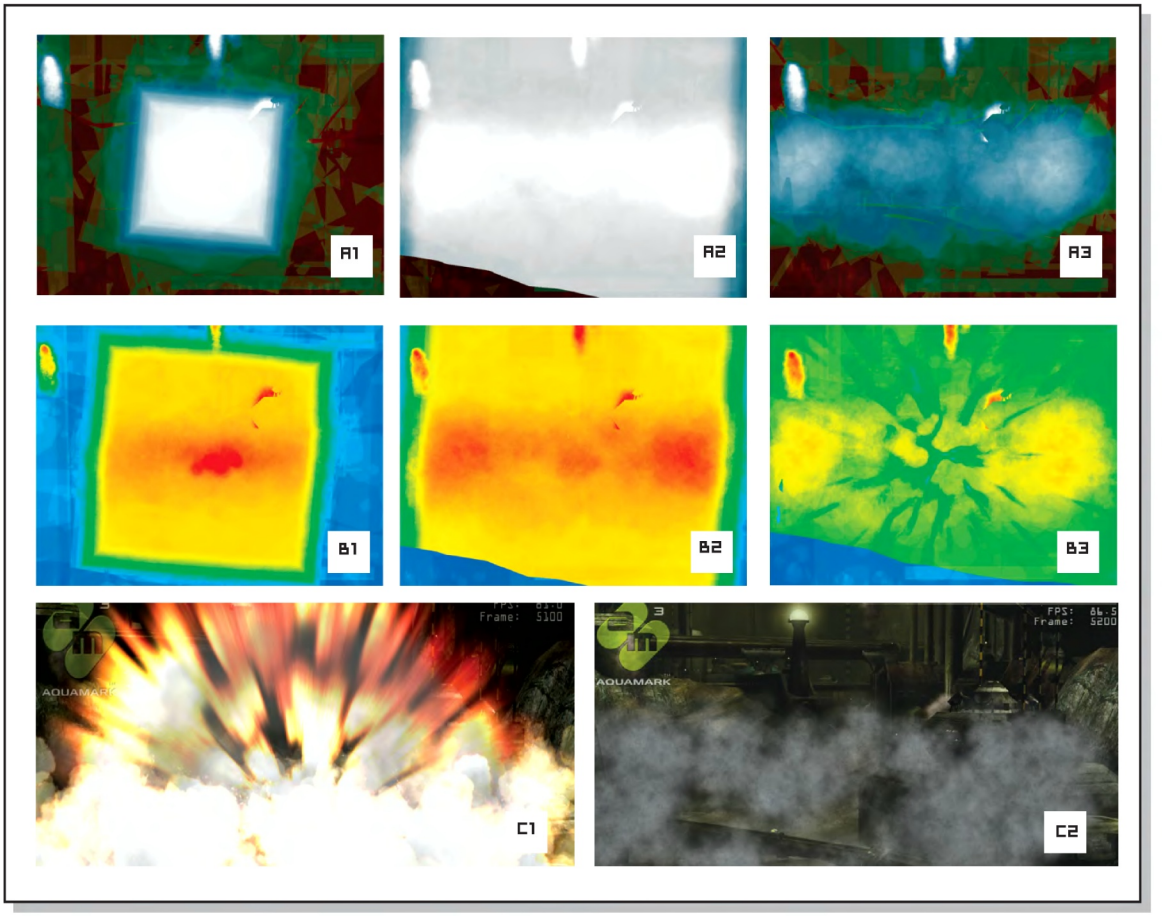
## LET THE GAMES BEGIN!

Aquamark 3's default test is roughly three minutes long. It is essentially one test but with different scenes at each point. At each stage, a particular subsystem of the graphics pipeline is stressed. The unique property of Aquamark 3 is that while the whole test is conducted in one seamless level, the different stages are radically different. For example, the polygon scene features hectares of what would appear as underwater mushrooms while the particle test has two giant machines churning out black smoke. Most impressive is probably the pixel shader test. The unveiled view shows vessels far in the distance about to engage in an underwater fire fight. The camera suddenly accelerates and we are taken in to the heat of battle. Pixel shaders bath the environment as the seabed is lit by the sporadic gunfire. After your graphics card wades through the stages, it will reach the finale – a massive detonation with so much overdraw that you feel time is grinding to a halt. When you regain consciousness, you'll be rewarded with the result screen; a CPU and GPU score is provided with a scaled total that's in the five digit range.

**ABOVE: Aquamark 3 emphasises commonly occuring rendering situations like overdraw or envrionment mapping.**

Besides the standard test (which is customisable of course), Aquamark also have three special tests to illustrate the underlying properties of the scene. The first is an overdraw visualisation test. It goes through the standard scene drawing the result in a three tier colour coded system. Blue values show that there's low overdraw, yellow is medium and red high.

At first we thought this may be a test to measure the overdraw elimination capabilities of hardware, but we were mistaken: 'The OVIST test is not supposed to produce results depending on the overdraw elimination concept of the hardware. It is mainly designed to obtain the total number of pixels running through the pixel shading pipeline regardless [of] if these pixels are finally visible or not,' Ingo explains. This counting method means users will get an identical




**ABOVE: Same explosion, different technical information. The first row of images (A1, A2 and A3) come from the AquaMark3 Shader Visualisation Technique. In this pixels colouring is based upon the predominant shader version used. Red is for PS 2.0, Green for PS 1.x and blue for no shaders. Brightness indicates the amount of overdraw involved. The second row (B1, B2, B3) shows the AquaMark3 Overdraw Visualisation Technique. In these images colour and brightness is scaled to indicate overdraw. Blue indicates small amounts of overdraw, yellow is medium amounts and red indicates a large amount of overdraw. Images C1 and C2 are taken from the same scene, but rendered using the standard AquaMark3 benchmark.**

picture each time.

The second test concentrates on shader visualisation. Ever wondered about what kind of shaders are used? This test will give you a total breakdown. Also based on the colour coded concept, red indicates parts rendered by ps2.0, yellow by ps1.x and blue means hardwired rendering. Each pixel will also use its brightness to indicate how much overdraw it has undergone.

'It makes great sense to give the customer and the gamer a good impression about the pixel's origin,' says Ingo. 'It produces surprising results, because many effects in the games industry have no need for complex shaders [as particle rendering for explosions, fire or fog] but are nevertheless responsible for the major amount of pixels in the scene due to its overdraw caused by alpha blending.'

The last specialty test uses a combination of the first two to produce a hybrid picture. An initial run is used to gather information about the overdraw properties of each frame. A second run is then conducted which takes the overdraw into account and produces a final fillrate result that is based on final output rather than pipeline throughput. Aquamark 3's final 'TRISCORE' is based on the three results from averaging the frame rate, CPU score and GPU score.

## FIRE AWAY!

One of the key contributors to the popularity of 3DMark is its online browser and comparison system. Aquamark features a comprehensive online result browser with the most flexible comparison tools we've seen. After a result is submitted, you'll can compare it with the rest of the community in many ways. The system incorporates filters which allow you to compare specifics (FPS, Triangles/Sec etc.) or broad parameters (GPU score). To find if your machine is performing at its optimal level you can search and filter for other results with similar or identical specs. The filter system allows you to find other results down to the finest details; CPU, GPU and memory speed can be specified with specific ranges using 1MHz increments. If you pride yourself on having the weirdest setup, you may just find someone else with your system. Once you're happy with the comparison data, graphs are effortlessly generated to illustrate your results.

Aquamark 3 should be reaching gold status as you read this. With some luck, the fully functional evaluation version should be already available for download. While it is too early to tell if Aquamark 3 will reach the cult status that 3DMark has gained, its innovative tests and arsenal of online tools should prove to be most popular. What are you waiting for?

Shuttle
Connecting Technologies

www.shuttle.com

## Compact outside, powerful inside

The Shuttle XPC delivers style, ergonomics and power that plain-old beige PCs can't match. Bigger is not better. Don't be fooled. You can get the power and flexibility of a desktop in one-third the space.

The technology and performance you need has been thoughtfully engineered into the XPC. And, the waste? Well, it's just gone. The tools you use should reflect who you are — lean, practical, efficient.

***Say 'hello' to the future of the PC***

XPC SB61G2

- Supports Intel socket 478 Pentium 4 / Celeron with 400/533/800MHz FSB
- Intel 865G Chipset supports Hyper-Threading technology
- Supports Dual Channel DDR 400 memory module up to 2GB
- Built in Intel Extreme Graphics 2 and six channel audio
- On board high speed connection: IEEE1394a, USB2.0, 10/100M LAN
- Integrated Cooling Engine (ICE) technology
- Overclocking - FSB, Multiplier

XPC SN45G

- Supports AMD Socket 462 Processor with 266/333/400MHz FSB
- nVIDIA nForce2 Ultra 400 - MCP-T Chipset
- Supports Dual Channel DDR 266/333/400*2, AGP 8X and six channel audio
- On board high speed connection IEEE1394a, mini 1394a, USB2.0
- Integrated Cooling Engine (ICE)technology
- Overclocking - FSB, Multiplier

Australia Atomic 2003 June
"Hot" award

Malaysia HWM 2003 Aug
"Silver" award

UK HEXUS 2003 June
"9 out of 10"

Gemany HARDWARELUXX.com 2003 July
"Excellent Hardware"

nVIDIA nForce2 Ultra 400 Chipset

AN35N-Ultra

- Supports Socket 462 AMD Athlon XP / Duron CPU
- nVIDIA nForce2 Ultra 400 Chipset supports 200/266/333/400 Mhz FSB
- Dual Channel DDR 200/266/333/400 Memory Up to 3GB
- Supports AGP 8X, 6 Channel Audio
- Supports ATA 66/100/133, 6 USB 2.0
- On-board LAN Port
- Overclocking - FSB, Multiplier

UAE Tbreak 2003 June
"Recommended"

Italy 3Ditalia 2003 Aug
"Top Product"

Intel 865PE Chipset

AB60R

- Supports Intel Socket 478 Pentium 4 / Celeron CPU
- Intel 865PE Chipset supports 400/533/ 800 Mhz FSB
- Dual Channel DDR 266/333/400 Memory Up to 4GB
- Supports 6 Channel Audio, 8USB 2.0, IEEE 1394 a
- Supports Serial ATA 33/66/100 with RAID function
- On-board Intel CSA Gigabit LAN

China 2003 Aug
"Best Choice"

**COMPUTEX TAIPEI 2003 SEP 22-26**, Booth No. Hall 2, Stand E 126-129

SATO TECHNOLOGY

**SATO Technology Pty Ltd**
www.satotech.com.au
E-mail:albert@satotech.com.au

**Box Hill South, Vic**
Tel: (03) 9899 6333
Fax (03) 9899 0200

**Silverwater, NSW**
Tel: (02) 9748 2999
Fax:(02) 9737 0777

**Osborne Park, WA**
Tel: (08) 9244 8688
Fax (08) 9244 2280

**Launceston, TAS**
Tel: (03) 6334 5050
Fax:(03) 6334 5051

GLOBAL

**Global Business Technology**
Tel: (02) 8718 0888
Fax: (02) 8718 9444
E-mail: sales@gbt.com.au
www.gbt.com.au

SEALED SECTION

# ATHLON 64 UNLOCKING GUIDE

**What do we do when AMD gives an Athlon 64 to test, but no magazines are allowed to publish results before the chip's 24/09/2003 release date? John Gillooly does...**

UNLOCK DATE: SEP.24TH!

AMD's Athlon 64 launch has been one of the most highly anticipated events in computing for several years now. It is of major significance not only for us end users but also for the industry as a whole. Until now 64-bit computing has been restricted to the most rarefied levels of data crunching, powering the sort of servers that drive the world's financial industry.

Earlier this year AMD released its Opteron chip, based on the same AMD64 architecture that the consumer level Athlon 64 has. This brought 64-bit computing for everyday servers and workstations, and now it is the Desktop PC's turn, as AMD prepares to unleash the Athlon 64 on the world on 24 September at the Computex trade show in Taipei.

The Athlon 64 is designed as a desktop chip and comes in a new form factor known as Socket 754. There will also be some models of Athlon 64 that come in the same Socket 940 form factor as the Opteron chips, although these are rumoured to be scheduled to migrate to a different Socket 939 form factor. Thanks to the long delays experienced in the lead up to the launch, there will be a wide complement of motherboards available soon afterwards, with NVIDIA, VIA, AMD, SiS and ALi all fighting for the chipset business.

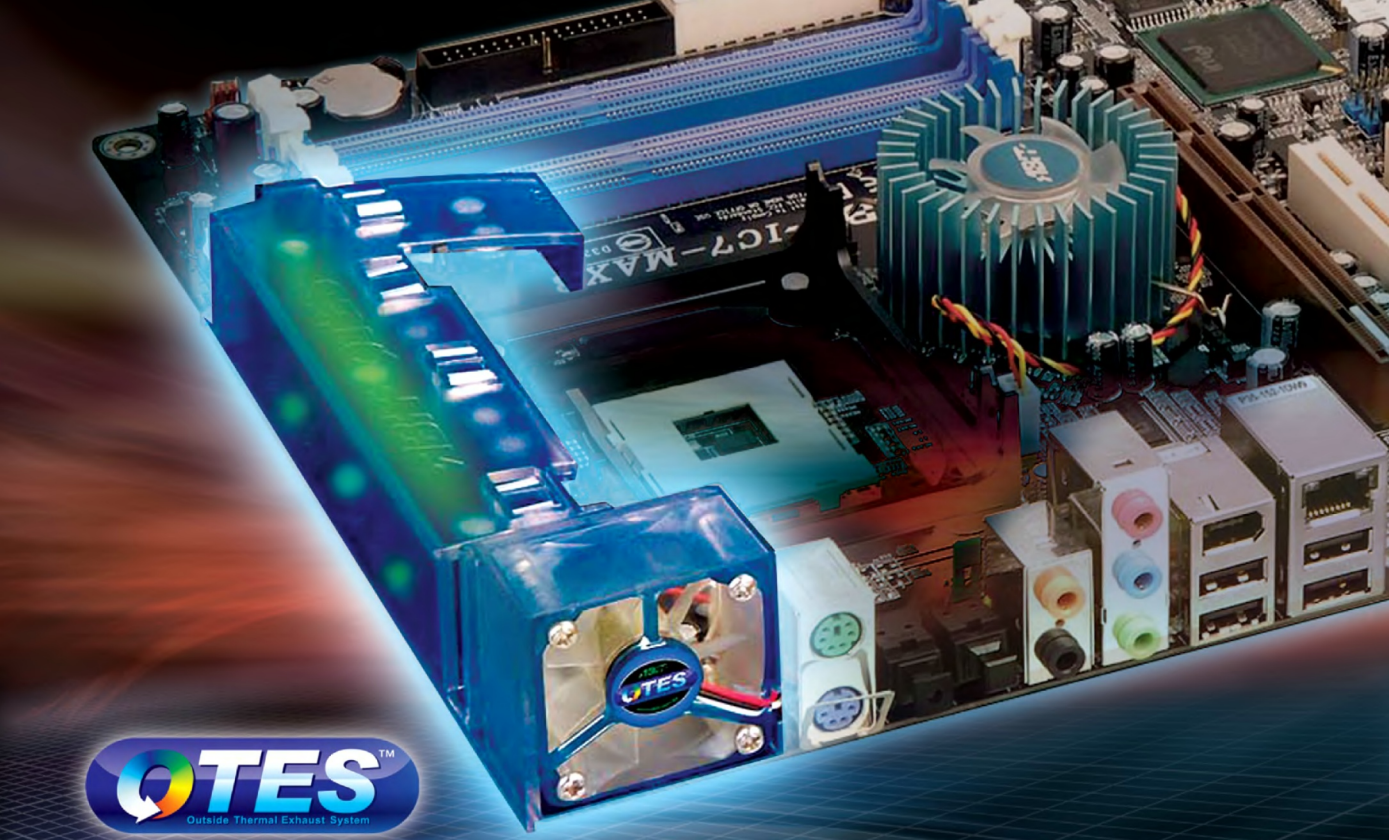
We have had one of the Athlon 64 chips in the labs to give it a thorough previewing in advance to the launch, and compare its performance with a 3GHz Pentium 4 CPU, however, as you may notice, this single page is strangely devoid of the technical detail and benchmark results one would usually associate with an *Atomic* feature, and you may have also spotted a certain caginess about exactly what we tested and which benchmarks we used.

Rest assured though, you already have our four-page Athlon 64 feature in your possession, and on 24 September at midday Eastern Standard Time, a time we like to think of as 64-bit Christmas, you will be able to read away to your heart's content. Think of it as a special bonus dose of excitement and anticipation waiting for digital Santa to slide down the double width pipeline.

No, we haven't trained up our army of flying monkeys to deliver brochures to the home address of people who the CIA tells us have bought *Atomic*. And neither have we pushed the boundaries of printing in invisible ink. The feature is on the cover CD in our sealed section. To unlock the sealed section you will need to go to the *Atomic* website **www.atomicmpc.com.au/athlon64** from midday 24 September and follow our simple instructions to unlock the secrets!

ATHLON 64FX FEATURE

ENCRYPTED ON THE CD!




# IC7-MAX3

## THE RISE OF COOLING

### IC7-MAX3

- Intel® 875P / ICH5R chipset
- GigaSystem: Overclock FSB 800 to 1000+
- 4 channel SATA Raid 0/1/0+1
  2 channel SATA Raid 0/1
- 4 Dual-DDR400, 8 x USB 2.0, 3 x FireWire
- AGP-8X Pro, 6 ch audio, 24 bit S/PDIF in/out
- Intel® Pro/1000 CT Network Connection
- Intel® Hyper-Threading Technology and PAT
- ABIT OTES™ technology
- Secure IDE™

### Siluro FX5900 OTES

**ABIT Engineered OTES (Outside Thermal Exhaust System) provides the most advanced VGA cooling available.**

- GPU Core : 400 MHz /Memory Core: 850 MHz
- High-speed 4M*32 128MB DDR Video Memory
- 4-pin TV-out connector
- AGP 8X with Fast Writes

### KV7

- VIA KT600 / 8237 chipset
- FSB 400, DDR 400
- AGP 8X / 4X
- 2 Channel SATA Raid 0/1
- 6 ch Audio, S/PDIF Out
- Onboard 10/100 Lan
- USB 2.0

Intel® PRO Network Connections

**Intel® PRO/100 CT Network Connection**
Achieve 2X Gigabit performance through Communication Streaming Architecture and enable ASF 2.0-based secure remote management with the Intel® 82547EI Gigabit Ethernet Controller.

SoftMenu™ FANEQ SERILLEL2™

ABIT Your Reliable Partner

ALTECH computers

**ALTECH Computers**
**Sydney office**
37-39 Egerton Street
Silverwater NSW 2128
Phone: 61-2-9735 5655
Fax: 61-2-9735 5656
http://www.altech.com.au

**Brisbane office**
62 Hope Street
South Brisbane QLD 4101
Phone: 61-7-3017 2000
Fax: 61-7-3017 2020
E-mail: sales-bne@altech.com.au

**CHECKSUN AUSTRALIA PTY LIMITED**
Century Estate, Unit 3/476 Gardeners Road.
Alexandria Australia NSW 2015
A.C.N./ 077 578 682
Phone: 61-2-9317 3155 Fax: 61-2-9317 5155
E-mail: bond@checksun.com.au
http://www.checksun.com.au

**CHECKSUN NEW ZEALAND LIMITED**
1016 Great Sounth Road. PO Box 112-088
Penrose, Auckland, New Zealand
Phone: 64-9-579 8838
Fax: 64-9-579 8832
E-mail: bond@checksun.co.nz
http://www.checksun.co.nz

Manfrotto

# Digital cameras: where they're at, and where they're going

**Daniel Rutter gets snap happy about photography in the 21st century.**

Digital still cameras (DSCs) are *young*. The first consumer model, the Dycam Model 1 (aka Logitech FotoMan), came out in 1990 and offered 320 x 240 greyscale photos, 1MB of internal storage, fixed focus, and no zoom. It cost US$995. The first colour film, by comparison, was invented in 1906. So it's not surprising that digital photography's got a lot more growing up to do. What's the latest, and what's coming tomorrow? Read on.

## CATEGORIES

There are five basic kinds of DSC. Well, roughly five, some of them blur together. We'll open the bidding with five, all right?

## TOY-CAMS

The smallest, simplest and cheapest digicams are the baby, 'toy' cameras, which sell for a few hundred dollars – well under $100 at the bottom end. More expensive toy-cams often have expandable memory, a flash and an LCD screen, but the cheaper ones don't. None of them have manual controls to speak of, and have lousy lenses with no optical zoom; some output 1,600 x 1,200, but the lenses keep real resolution down well below 800 x 600. But they are cheap.

Mobile phone and PDA cameras are also in this category. They all have a screen, but their lenses are just as bad, and that's what really matters. Phone-cam pictures look as lousy as $100 digicam pictures. Sometimes as lousy as $25 digicam pictures.

## GADGETS AHOY!

Next up are the ultra-compacts; genuinely pocketable cameras, with decent lenses and respectable resolution. Ultra-compacts often have a full suite of basic features – flash, expandable memory, good-sized LCD screens, and even autofocus zoom lenses.

Casio's Exilim cameras are, at the moment, the epitome of ultra-compact. This is the smallest of them, the Exilim EX-S3.

For about $750, the EX-S3 gives you 2,048 x 1,536 resolution, flash, an enormous (two inch!) LCD screen, 10MB built in memory and an SD/MMC memory card slot. It's only 90 x 57 x 12mm in size, and weighs less than 90 grams in total.

The EX-S3 is an amazing package, but it has limitations. Its tiny fixed-focus lens (the equivalent field of view of a 35mm focal length lens) gives it super-fast startup and practically nonexistent shutter lag, but not the sharpness of a larger autofocus lens. Never mind the '3.1 megapixel' image size; it isn't likely to give you more than two megapixels of detail.

You can get a lot more features for $750, but if you don't want a lot more *camera*, the S3's a star.

If you'd like an S3 with a zoom lens, Casio can oblige.

### EQUIVALENT?

**The field of view of a lens is commonly expressed as a focal length, which is annoying because focal length varies depending on the size of the camera's sensor, as well as with the actual magnification power of the lens.**

**The focal length is how far from the sensor a pinhole would have to be to give the same field of view. But smaller sensors give the same field of view with smaller lenses. A 35mm film frame is actually 36mm wide; a '50mm' lens pointed at that sensor would become a '100mm' lens if you swapped in a 18mm wide sensor.**

**For this reason, focal lengths are often specified as '35mm equivalent'. For reference, the horizontal field of view of a 50mm lens on a 35mm camera is about 40 degrees. 25mm – 80 degrees; 100mm – 20 degrees. And so on.**

There's the fatter EX-Z3, packing a telescopic 3x zoom with autofocus. The same nominal resolution as the S3, it costs a bit more, is a bit bigger and takes longer to start up, but it's a real three megapixel camera. And it could still be hidden in a cigarette packet.

In the same class as the EX-Z3 is Minolta's DiMAGE Xt. Yours for less than $900, it's a flat box like the EX-S3, but contains a remarkable right-angle 3x zoom lens. The lens limits the resolution, but it does more with its 2,048 x 1,536 nominal resolution than the EX-S3, and you get 37 to 111mm equivalent zoom.

One more small step up the size ladder is Canon's Digital IXUS II. On the surface, it seems to have unexciting specs considering its $899 price tag. Its telescopic autofocus lens only manages 2x optical zoom, from 35 to 70mm-equivalent, and is about the size of two stacked EX-S3s.

That limited-zoom lens produces excellent 2,048 x 1,536 images. The stainless steel casing is rock solid, it's easy and fast to control, and its 1.5in LCD is bright and clear. If you're willing to trade a bit of 'wow' appeal for better photographic performance, the IXUS II is a strong ultra-compact contender.

On the fuzzy line between ultra-compacts and cameras that simply aren't big is Nikon's innovative Coolpix SQ. Its body is less than 85mm square when closed.

Nikon have been making 'hinging' digicams for years. This design lets you use the camera above your head or at waist level and still see the LCD screen, without making the controls tricky or putting the screen on a flimsy pivot.

# Hi Performance Digital SLR

**GT** Lens 7x Optical Zoom

**5** Effective Megapixels

## DiMAGE 7 Hi

Digital Imaging with SLR Essentials

## THE PINNACLE OF PERFORMANCE

Superior quality 5 megapixel images from Minolta GT Lens and Minolta CxProcess®
Rapid autofocus and ultra-fast shutter speed (up to 1/4000 second)
Fast continuous shooting at 5 megapixel resolution (approx. 3fps)
7x Optical zoom (28-200mm) and Wide/Tele macro imaging
Embedded ICC Profile and selectable colour space
Flash sync terminal and built-in flash
Extensive system accessories

For more information Free Call 1300 72 8606 **www.minoltacamera.com.au**

MINOLTA

The essentials of imaging

The SQ has 2,016 x 1,512 resolution, and uses standard CompactFlash storage and like other ultra-compacts, it still runs from a proprietary battery. It has no optical viewfinder, but its LCD is useable in all kinds of lighting, even direct sunlight.

The SQ's 37 to 111mm equivalent zoom lens isn't quite up to the standard of the bigger lenses, but it's a good match for the camera's resolution. The lens also has the trademark Coolpix super-close-up capability. If you want to take pictures of very small things, Coolpixes have always been the point-and-shoot digicams to beat.

The SQ's street price dips under $700, and it is a good buy. Technically, the camera is notably superior to the really tiny but similarly priced zoom cameras from Minolta and Casio.

## THE MAINSTREAM

Next up the ladder are the 'regular sized' point-and-shoot cameras, which are usually small enough to fit in a *big* pocket. Most DSCs fall into this category; they're almost all box shaped, with separate 'coaxial' optical viewfinders, plus the usual through-the-lens viewfinding on the rear screen.

All things being equal, these cameras will give you a better lens and better control than an ultra-compact, and they're still not unmanageably big.

This is Sony's DSC-P92, which almost qualifies as an ultra-compact; it's only 120 x 58 x 33mm. Sony make a range of DSC models that use this lens-at-one-end design, and they're all decent value.

The $899 P92 has 2,592 x 1,944 resolution, a 38 to 114mm equivalent 3x zoom lens that almost uses five megapixels, and it runs from a couple of AA batteries. AA nickel metal hydride cells don't give the same watt-hours per cubic centimetre as proprietary lithium ion packs, but they're much, *much* cheaper.

The more conventionally styled DSC-V1 is $1,399, putting it at the high end of the consumer camera market. It has the same resolution as the DSC-P92 but a superior, 4x zoom lens, very low image noise, speedy performance (including lightning-fast autofocus), and an IR-sensitive 'NightShot' mode that lets it take pictures in complete darkness if there's some near-IR light around; it has got its own little IR illuminator.

The V1 can also *frame* a shot in NightShot mode, then use its pop-up flash to *take* it. This perhaps ought to be called 'ambush mode'.

The Coolpix 4500 is Nikon's current high end swivel-cam, costing $1,399. Canny shoppers can find it for less than $1,100 now; at that price, it's excellent value.

On top of the neat-o swivel design, there's 2,272 x 1,704 resolution with a 4x, 38-155mm equivalent zoom lens. The 4500's also got Nikon's usual stunning macro performance, and very solid construction. Not the fastest camera ever made in the operation-speed, or lens-F-stop sense, there are four megapixel cameras that deliver sharper images, but that's the price you pay for the extra reach of the 4x lens.

### F-WHATS?

**F-stops are an endless source of confusion for amateur photographers.**

**The F-stop, or F-number, tells you the brightness of the image being cast onto the sensor by the lens. It equals the focal length of the lens divided by the aperture – the size of the hole letting light in. The brightness of the image on the sensor is inversely proportional to the F-number squared, so 'f5.6' means one quarter as much light as 'f2.8'.**

**However, higher F-numbers also give you more depth of field – the range of distances over which things will be in focus. For this reason, most lenses can 'stop down' their aperture to increase their F-number when needed.**

**Lenses capable of low F-stops are often called 'fast' lenses, because they let you use a faster shutter speed to get the same exposure.**

## GETTING SERIOUS

Above mainstream cameras in both price and size are 'prosumer' models. Prosumer and mainstream are blending together, but the idea of prosumer is that they're integrated-lens cameras, often with Single Lens Reflex (SLR) design, which have good enough optics and flexible controls that they can actually be used for professional photography. And they often are, though seldom the only camera a pro's carrying.

Canon's PowerShot G5 costs $1,599 – cheaper if you shop around. It's got 2,592 x 1,944 resolution, and a quality 35 to 140mm equivalent lens (4x zoom) which wastes very few of those pixels. At full wide angle, it manages f2.0 (f3.0 at full zoom), which is an extraordinarily low F-number for a point and shoot camera, and gives the camera good low light performance.

The G5's fold-out LCD is bright and clear, complementing its good collection of manual controls and features, which include internal processing algorithm control and 12 bit per channel RAW-format images, which most prosumer cameras don't have.

Like a lot of other prosumer cameras, the G5 can accept accessories, including fancy extras from Canon's SLR cameras.

The DSC-F717 is the fourth camera Sony have made with this remarkable design. The lens barrel is huge compared with the small swivelling electronics package behind it.

The F717 has 2,560 x 1,920 resolution, and impressive 38 to 190mm equivalent zoom; a whopping 5x, controlled by a fly-by-wire ring on the end of the lens. Flick a switch and the control ring can be used for manual focus.

The F717 has class-leading resolution – it doesn't give much away to six megapixel professional cameras.

Even at full zoom, the giant lens can manage f2.4, with f2.0 at maximum wide angle. There's a bit of distortion at full wide angle, and the funny shape of the camera takes some getting used to. The F717 also has a funkalicious laser-grid autofocus illuminator, like a device used by Predators when looking for a contact lens.

The DSC-F717 costs $1,999. For good reason.

Minolta's DiMAGE 7Hi costs more than the DSC-F717. You won't get much change from $2,100, and full-service dealers will charge more. It's 2,560 x 1,920, with a massive 28-200mm equivalent lens (more than 7x) zoom range.

Super-zoom lenses are an optical compromise, but this one does less damage than usual. It's not a distortion monster, and the real resolution of this camera is in the middle of the 'five megapixel' pack.

On the minus side, there's no image stabiliser. You'll need to rest the camera against something if shooting at full zoom in anything dimmer than overcast daylight.

The DiMAGE 7Hi is *riddled* with controls, features and options – full manual control, of course, but also a hinging electronic viewfinder, highly configurable in-camera image processing, fancy real time data overlays for the viewfinder image. . . the list goes on. This is a Gadget Man's Camera if ever there was one.

And bless it, the blighter runs on AAs, and takes cheap CompactFlash cards for storage.

## THE BIG GUNS

If prosumer is not enough, then it's a pro cam for you.

Far and away the most popular professional digital cameras are fundamentally similar to 35mm SLR cameras in size and shape. They're called Digital SLRs, or DSLRs,

and their principal advantage over point-and-shoot cameras is that they have interchangeable lenses. Zoom lenses of

various lengths, and non-zoom 'prime' lenses with superior optical quality to any zoom, give pro cams tremendous flexibility.

Canon's EOS-1Ds is the current class leader in the market. You'd bloody well want it to be, since the 1Ds back – just the back, no lenses – has a price tag of $16,499.

No, no, wait; it gets better. Try buying a few nice lenses to go with it. None of those *consumer* lenses, *please*; 'L-series' pro lenses all the way. Get a 24-70mm general purpose zoom, a 100-400mm optically stabilised zoom for long shots, and a lovely f1.0 50mm prime, and you're likely to find your wallet another $10,000 lighter, at least.

For your money, the 1Ds gives you monstrous 4,064 x 2,704 resolution, with a full-frame sensor – most DSLRs have smaller-than-35mm sensors that make lenses behave as if they had a higher focal length. Image quality is, of course, superb, provided you use a decent lens.

The EOS-1Ds also has a vast array of manual controls, many of which are only of interest to professional photographers. Multiple colour spaces, configurable JPEG compression, exposure, sensitivity and white balance bracketing, an interchangeable focus screen; even an optional Data Verification Kit that cryptographically authenticates raw image files saved on a special CompactFlash card to guarantee they haven't been edited.

For the price of the 1DS with *one* nice lens, you could buy more than 20 Casio EX-S3s.

Coincidentally, they'd pretty much weigh the same, too. The 1Ds with a decent lens can weigh more than 2kgs.

Most of the world's DSLRs are not behemoths like the 1Ds. They look more like regular full-size 35mm cameras (on which their bodies are based, though less and less with each passing year). They also cost a lot less, though still plenty more than most digicams.

This is the Canon EOS-10D, which has been a runaway success, not least because of its mere $3,599 cost – for the back with no lenses.

Like the EOS-1DS, the EOS-10D uses standard EOS System ('EF mount') lenses, although it's got a smaller sensor that gives a 1.6x focal length multiplier. Good if you want telephoto; annoying if you want wide angle.

This is the same multiplier as the older EOS-D60, which the 10D closely resembles in many respects. The 10D has the same 3,072 x 2,048 resolution and the same basic feature set, but is a bit better laid out, a little lighter, and also cheaper, than the D60. All of the camera pictures in this feature were taken with a D60.

## THE DIGITAL CAMERA OF THE FUTURE

It's possible that, a hundred years from now, the still camera as we know it won't exist. The idea of grabbing just one frame of an image – maybe even the idea of 2D image capture itself – may be very much out of fashion.

In the near future, however, the basic nature of the still camera will stay the same. Its parts are going to undergo change, though.

## THE LENS

Do you want a camera the size of a matchbox with 50x zoom and the ability to take pictures by candlelight? So do we. But you don't always get what you want.

# BuyQuick
·com·au

## SALE NOW ON!

**PALM HANDHELD T2**
**$699 - SAVE $100!**
New model! Stunning Colour,
Bluetooth Built-in

**EPSON STYLUS PHOTO 935**
**$622.55 - SAVE $125.45!**
Wireless Print From Smart Media
Compact Flash, Secure Digital

**CANON G3**
**$1,225 - SAVE $174!**
5 Megapixel Resolution
4x Aspherical Zoom, Movie

**SONY DSCP92 DIGITAL CAMERA**
**$798.99 - SAVE $100!**
5 Megapixel Resolution
3x Optical Zoom, Movie

**IOMEGA 750MB ZIP DRIVE**
**$316.72 - SAVE $132.28!**
50 x 50 x 50 Read/Write/Re-write
USB 2.0 Data Transfer

**PHILIPS 15" LCD DISPLAY**
**$499 - SAVE $150!**
1024 x 768 Pixels
Available in Black/Beige

Find out why millions of Australians have visited BuyQuick!
**Your Australian online department store since 1998.**

**Computer Hardware**
**Software & Games**
**Cameras & Camcorders**
**Electrical & Appliances**
**Mobile Phones**
**Hampers & Sweets**
**Flowers & Gift Ideas**
**Fragances & Skincare**
**Toys**

# 1800 354 359

Shop by phone during **10am - 8pm EST WEEKDAYS**

## DELIVERY

All orders are shipped with courier for fast Australia wide delivery from our distribution centres around the country!

## $10 VOUCHER

Order by 10/11/03 mention **"ATOMIC"** in the ***SPECIAL OFFERS*** box on the order form when placing your order & we will deduct $10 Off the total for all orders over $50 excluding delivery

Lenses are the one component that's pretty much exactly the same, technically, as a film camera. They're generally focusing onto a smaller sensor area than the size of a 35mm film frame (larger digital sensors exist but are spectacularly expensive). But apart from that they're the same deal.

There are, unfortunately, serious laws-of-physics reasons that are keeping good lenses big, and expensive. One day we may have adaptive camera optics that re-shape lens elements on the fly – optical image stabilisers already do this, with a servomotor-deformed fluid filled prism in the middle of the lens – but don't expect anything like that to hit the market this decade.

The lens on the EOS-1Ds is a 100-300mm zoom (only 3x, but starting from an already-fairly-telephoto 100mm). It's a consumer lens, relatively small, light and cheap – it's worth about $450 new. It can only manage f4.5 and f5.6 at the wide and tele ends of its zoom range, respectively, which is pretty unexciting.

The Minolta DiMAGE 7Hi, in the foreground of the picture below, is wound out to its full 200mm-equivalent zoom. Its maximum aperture settings give it f2.8 and f3.5 at its zoom extremes, though; at its 200mm setting, this means it's throwing a 65% brighter image on its sensor than the larger Canon lens manages at only 100mm.

Why can this little lens manage this? Because its sensor is only about a quarter as wide as the 35mm-sized sensor in the 1Ds.

The smaller you make the sensor, the smaller the lens can be and score the same basic focal length and f-number stats. Smaller lenses, though, need to be better made, all things being equal. You also can't extend this forever, even if you've got the technology to physically construct a multi-megapixel sensor the size of a pinhead. That sensor would see a lot of rather interesting diffraction effects, not to mention probably go up in smoke any time you pointed the camera at the sun.

*Somewhat* smaller than 35mm sensors, though, are a fine idea for even professional cameras. That's the idea behind the new 'Four Thirds System' (**www.four-thirds.com**), an Olympus, Kodak and Fuji project to make removable-lens DSLRs with an 18 x 13.5mm sensor. That's still quite big by the standards of many digitals, but it's less than three-tenths of the area of a 35mm frame.

There is only one Four Thirds camera so far though (the Olympus E-1) and just a handful of lenses, so it hasn't really made a splash.

Another option is sticking with autofocus 35mm camera lens systems – because there are tons of lenses for them – and making special lenses that use those same mounts but are smaller and lighter and throw a smaller circle of light into the camera. With a 35mm-sized sensor, these lenses give images with dark 'vignetted' edges. With a smaller sensor, they work fine. Nikon are the only manufacturer to have done this yet, with their 'DX' range of Nikkor lenses.

## STORAGE

At the moment, digital cameras all carry around their own storage, almost always in the form of non-volatile 'Flash' RAM, and in a plethora of mutually incompatible card types.

Sony have broken from the pack with their CD Mavicas, which record to 77mm CD-R and CD-RW discs, readable in all ordinary tray-load drives. The cameras work almost as smoothly as their Flash-storage cousins but they're more fragile – you can't have everything.

Sony's older floppy disk Mavicas were popular, despite the heavy JPEG compression they used. The CD Mavicas offer much better image quality and gobs of storage. They're ideal holiday digicams.

Give a camera a wireless data link, and suddenly its inbuilt storage becomes a mere buffer.

Nikon's recently released four megapixel rapid-fire D2H DSLR, aimed at the sports journo market, has an optional IEEE 802.11b network adaptor that can FTP images directly to a remote server. Fujifilm have shown an 802.11b-capable camera prototype, too.

Sony have come to the wireless party with their Digital Passport system. It's a specialist ID photo setup combo that uses Bluetooth to send shots to up to three printers wirelessly, so you can shoot and print simultaneously.

Wireless-enabled cameras *will* come to the 'prosumer' market soon enough. Squirting images invisibly to a hard drive in your backpack or to the laptop back in your car sure beats wearing a bandolier of thrillingly expensive memory cards.

And don't expect just data *sending*, either. Kodak and Nikon both already make DSLRs that can accept GPS input, and write location data to their images' EXIF headers. So you can pinpoint the spot on the earth's surface where you took each picture.

Ricoh have a variant of their prosumer RDC-i700 that can accept a GPS card, too.

## VIEWFINDERS

Tiny screens on mobile devices – digital cameras, PDAs, mobile phones – are not a great technology. Once we've got wearable displays you can put on like a pair of sunglasses, with a toggleable-transparency back layer so you can either see through the display image or block out the world entirely, such displays will be the obvious choice for most applications where images are currently being stuffed onto a screen the size of a large postage stamp.

Retinal-projection display technology could also be stuffed into the camera itself, of course, and look like a

# DOMAYNE digital camera the home of TECHNOLOGY

## capture this

$120 OFF

$479

OLYMPUS

OLYMPUS C350 DIGITAL CAMERA
3.2 effective megapixel resolution, 3x optical zoom, compact and stylish design. Includes 16Mb XD card.
C350

Flexirent $9.46 per month*

$100 OFF

$899

OLYMPUS

OLYMPUS C740 DIGITAL CAMERA
3.2 effective megapixel, 10x optical zoom for ultra telephoto shooting and high image quality. Includes 16Mb XD Card. C740

$130 OFF

Flexirent $8.31 per month*

$769

SONY

SONY DSCP92 CYBERSHOT DIGITAL CAMERA
5.0 effective megapixel resolution, 3x optical zoom lens with smart digital zoom. MPEG movie VX, various scene selection and picture control modes. Includes rechargeable NI-MH batteries, charger and 16Mb Memory Stick. DSCP92

• EXPERIENCE THE DOMAYNE DIFFERENCE •

23230

DOMAYNE

Some goods may not be on show or available at each Domayne Franchised store. Domayne stores are operated by independent franchisees. *Based on a 36 month commercial rental agreement or consumer lease, payable monthly, including GST. Subject to credit approval. Rates current as at July 2001, subject to change.

SYDNEY METRO - OPEN 7 DAYS • AUBURN PH: (02) 9648 5411 • CAMPBELLTOWN PH: (02) 4627 4311 • CARINGBAH PH: (02) 8536 5200 • LIVERPOOL MEGACENTA PH: (02) 8778 2222 • PENRITH PH: (02) 4737 5000
NSW REGIONAL - OPEN 7 DAYS • KOTARA (NEWCASTLE) PH: (02) 4941 3900 • WARRAWONG PH: (02) 4255 1800 • WEST GOSFORD PH: (02) 4322 5555
ACT - OPEN 7 DAYS • FYSHWICK PH: (02) 6126 2500 • GOLD COAST BUNDALL PH: (07) 5553 2100

traditional one-eye viewfinder until you peer through it. In the interim, organic LED (OLED) displays look set to replace LCDs.

Kodak's EasyShare LS633 has an OLED display; a nice big 2.2in one.

What's the difference? Well, OLED is viewable from even extreme angles, with no colour or brightness oddities. It's very bright, too, and because it has no backlight, it'll draw less power when it's displaying a dark scene.

Production OLEDs only have a lifespan of several thousand hours, so far, which makes them unsuitable for always-on displays. But they're OK for cameras and mobile phones.

ABOVE: **How a digital camera with a simple RGB-mosaic sensor actually sees the world.**

## SENSORS

At the moment, the jury's out about the kind of image sensors digital cameras will use in the next several years.

Almost every digital camera on the market today uses basically the same sensor design – a single Charge-Coupled Device (CCD) or Complementary Metal Oxide Semiconductor (CMOS) chip made up of lots and lots of tiny image sensing cells. Each cell can only see black and white, so there's a mosaic of coloured filters on top of them. The camera 'demosaics' the image, interpolating full RGB colour for each pixel from the values of its neighbours.

Doing this hurts resolution. Obviously, a sensor that could detect full RGB on each pixel would be better. Foveon (**www.foveon.com**) have made such a sensor; they call it 'X3'.

The only camera that uses an X3 sensor, so far, is Sigma's rather peculiar SD9 DSLR. Its 3.4 million true RGB pixels give it output quality up there with the best of the six megapixel mosaic-sensor cameras. But there are already mosaic-sensor cameras with more than 10 million pixels, which beat the SD9 hands down for resolution. Just adding more and more mosaiced pixels may turn out to be the winning design.

Fujifilm have another, less revolutionary, special sensor design, called 'SuperCCD'. SuperCCDs have a diagonal honeycomb pattern of sensor cells; the recent SuperCCD XR design has two sub-sensors at each pixel location, one with a lot more gain than the other, to deliver improved dynamic range.

Fuji have claimed that a SuperCCD, with their own cunning interpolation algorithms, can give twice as many pixels of real output resolution as it has effective sensor cells. The reality isn't that dramatic, but SuperCCDs *do* produce higher resolution results than conventional sensors with the same pixel count.

## WHAT'S COMING IN THE FUTURE?

More resolution for fewer dollars, of course, and more speed; Nikon's Lateral Buried Charge Accumulator and Sensing Transistor array (LBCAST) CMOS-based sensor is capable of eight fps in the four megapixel D2H. Consumer camera burst shooting speeds are rising by the year.

More sensitivity (light-catching ability) and dynamic range (black-to-white intensity range) is also important; these are the two areas where digital sensors are still catching up with film.

The SuperCCD XR is a step towards giving digital sensors the sensitivity of medium-speed film. Other manufacturers have been achieving similar gains by background image processing magic; the current Canon EOS digitals can deliver practically noiseless results from exposures several minutes long, without having to take another closed-shutter 'dark field' exposure afterwards so its noise can be subtracted from the last shot.

Sensors with higher sensitivity and resolution will soon allow digital cameras to deliver effective low-noise sensitivity, for normal print sizes, which is better than film cameras can manage, no matter what film you use. The *very* long exposures used for things like astrophotography will still be the domain of film and cryogenically cooled digital sensors (less heat means less noise) for a while yet, but otherwise, film's goin' down.

Dynamic range is less of a hurdle. A lot of digitals can already get good detail in shadowed areas of bright-sunlight photos, and that's about all you need for most purposes. There are also already cunning sensor designs that mask off a low dynamic range sensor in a pattern determined by the incoming light, to compress the dynamic range of the image it sees; the result can be expanded again later.

WIN!

Nikon DIGITAL

bluechip infotech

Now that you're all juiced up for home imagery, you no doubt are lusting for the right tool. And thanks to Bluechip Infotech (**www.bluechipit.com.au**) we've got it for you.

You could win the fabbo Nikon Coolpix 3100! Just answer the question below (correctly) by emailing **win@atomicmpc.com.au** to be in the draw. Put 'Nikon Comp' as the email subject.

The winner will be announced in *Atomic 35*.

**Q: What kind of camera is being photographed on pages 38 and 39 of this issue?**

# ELEVATED PERFORMANCE

POWERED BY ATi

SAPPHIRE

Load up your PC with amazing visual clarity and speedy framerates using ATI's latest graphics chip. At PRO level you will take control of alternate worlds with realism never seen before in games and multimedia applications. Experience the next level in professional gaming!

## THE BEAST ALL-IN-WONDER® 9700 PRO

[ FEATURES ]

- Powered by the RADEON™ 9700 PRO visual processing unit
- Unparalleled TV and DVD features: TV-ON-DEMAND™, Gemstar GUIDE Plus+™, mulTView™, VIDEOSOAP™, THRUVIEW™ and much more
- Easily edit video into your own creations: Video CD and DVD Authoring
- Radio frequency wireless remote for your PC provides a hand held 30-foot user interface. Control your mouse and PC applications at the click of a button
- Stereo TV tuner with 125 channels Intelligent Teletext on your PC

## ATLANTIS RADEON 9800 PRO

[ FEATURES ]

- RADEON 9800 PRO Visual Processing Unit (VPU)
- 256MB or 128MB DDR memory accelerates the latest 3D games
- 256-bit memory interface removes hardware performance bottleneck and provides end users with faster 3D graphics
- Supports AGP 4X/2X/8X, DirectX® 9.0 and the latest OpenGL® functionality
- New SMARTSHADER™ 2.1, SMOOTHVISION™ 2.1, Unique VIDEOSHADER™ engine, ATI's new FULLSTREAM, Hydrovision

## ATLANTIS RADEON 9600 PRO

[ FEATURES ]

- RADEON™ 9600 PRO Visual Processing Unit (VPU)
- Industry's only 4-pipeline graphics solution in its 2nd generation, providing twice the rendering power of any currently competing product.
- Supports AGP 4X/2X/8X, DirectX® 9.0 and the latest OpenGL® functionality
- New SMARTSHADER™ 2.1, SMOOTHVISION™ 2.1,Unique VIDEOSHADER™ engine , ATI's new FULLSTREAM ,Hydorvision

## ATLANTIS RADEON 9200

[ FEATURES ]

- RADEON™ 9200 Visual Processing Unit (VPU)
- 128MB DDR memory accelerates the latest 3D games
- Industry's only 4-pipeline graphics solution in its 2nd generation, providing twice the rendering power of any currently competing product
- Supports AGP 4X/2X/8X, DirectX® 9.0 and the latest OpenGL® functionality
- New SMARTSHADER 2.1, SMOOTHVISION 2.1,Unique VIDEOSHADER engine, ATI's new FULLSTREAM

pc world BEST BUYS

atomic

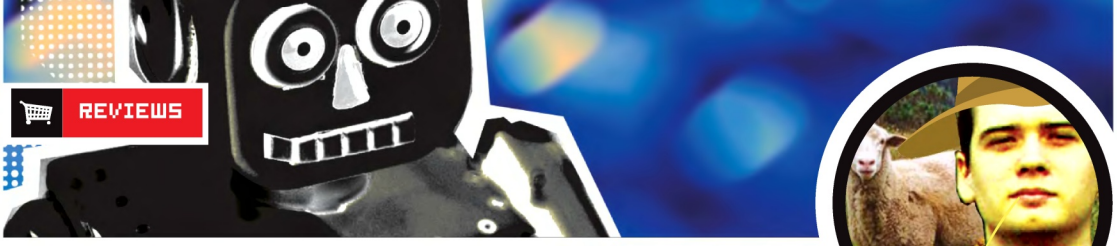
VALUE AWARD

PROUDLY DITRIBUTED BY ACHIEVA GROUP OF COMPANIES

SYDNEY TEL 02 9742 3288 BRISBANE TEL 07 3857 5969
MELBOURNE TEL 03 9561 9899 PERTH TEL 08 9204 2388

WWW.ACHIEVA.COM.AU

atomic
artomic



# Spam, man

**Braving the onslaught of spam, Logan Booker tussles with his worm, engaged in all-mail combat.**

Unless your email address is home to Microsoft's support department, or Sarah Michelle Gellar's fansite, the normal person can expect, on average, ten emails a day from friends, family and organ-enlargement specialists. It's only been recently – say in the last few years – that mass-mailing worms have taken control of our bandwidth using built-in SMTP (Simple Mail Transfer Protocol) engines and intelligent algorithms to search our hard drives and address books for possible targets. Now, most people can expect some fifty or so emails in their inboxes a day, and like pop-ups and banners, they're a waste of your time and money. It gets worse though.

Those who were concerned when W32/MSBlast (or Lovsan, or Poza, depending on the security firm you're most attached to) hit, shouldn't have been. MSBlast was poorly coded and failed miserably at its 'mission' – to DDoS Microsoft's update site. This was thanks in part to Microsoft taking down www.windowsupdate.com, and the fact that the default link for automatic updates is windowsupdate.microsoft.com anyway. The reboots were thanks to dodgy coding as well; the virus fails to check which OS your system is using and picks randomly between XP and 2000 exploits.

In reality, being victim to SoBig.F spam is much more entertaining.

The adventure began a few days ago while I was checking my email with Outlook Express. Now, at home, I have two addresses; a personal one for, well, personal emails; and a support email for programs I used to distribute. While my home address is listed almost nowhere, my support email is all over the place – on Websites hosting my programs and in readme files that accompany these applications. Perfect bait for SoBig.F.

So, as I waited for the 127-odd emails to download, I started to think how I could stop OE from downloading spam mail. Thankfully, there are plenty of applications available to intercept email between mail servers and clients. After a quick Google, I downloaded the free version of SAProxy (saproxy.bloomba.com), which uses SpamAssassin to 'rank' incoming email, and Bayesian filtering to 'learn' about new types of spam. After a quick read through the manual and some configuring of the mail client, I had my mail proxy set to sift through the spam. And after a few tries, it was picking up SoBig.F emails better than Charisma Carpenter scoping guys at an SGL LAN.

It was only when I accessed my mail the next day I discovered I couldn't retrieve anything from my support mailbox. My personal email address was fine; not only did it connect, there weren't any emails – situation normal. The support email on the other hand refused to accept my password; which I checked was correct. While I didn't yell especially loud at the mail proxy, if it could've talked, it and I would have had a heated debate on the merits of spam filtering and mail client compatibility. It would've been an argument I'd have lost though, as I quickly discovered SAproxy was not at fault.

It was then I decided to try and telnet to the mail server to discover what was wrong. Opening up a command prompt, I entered my details and waited patiently as it tried to connect, only to be meet with a 'unable to create lockfile' error message. The short story? I'd reached my mail quota, something I was certain wasn't right.

The only sane thing left to do was FTP to the server and find out exactly how big my mailbox was. I logged in and checked the file.

Sixteen megabytes. That's nothing – but mail quota has nothing to do with file size, so I did the math. Each SoBig.F email is about 70KB – so divide this by 16.9 million, and you have 250 or so emails.

I'm trying to think of the damage *without* a quota. . .

My only option was to delete the mail file, something I had to do for the next few days just so I could log into my account. It's stopped now, so I'm guessing my ISP is blocking the mail. Why it took so long is a mystery, but I'm not complaining.

If there's a lesson here, it's to update your virus scanners and firewalls. And be afraid of mass-mailing worms. I am.

discreet combustion

ARTOMIC
*'Atomic Modder' by Aversion*

First of all I sketched down a few Ideas of what I wanted to do and when I was happy with my concept I loaded up Lightwave 7 and began to model all the objects. Next it was into Photoshop where all the textures were created. Everything was then put into place and rendered in Lightwave. After the rendering was finally completed I loaded it up in Photoshop and spent some time touching it up.

**Create the winning Artomic and win the latest version of combustion, valued at $1,995, from discreet! Email a preview (no larger than 5MB) of your games or hardware-themed masterpiece to artomic@atomicmpc.com.au.**

# BENCHMARKS

At *Atomic*, it is our primary intention to give you the final word on the latest in hardware and PC technology. An integral part of determining the performance of a particular piece of hardware is benchmarking, and this is something that we take very seriously in the *Atomic* Labs.

## SYSmark2002

SYSmark2002 is a product of the collaboration between industry group BAPCo (www.bapco.com) and MadOnion.com (www.madonion.com). It is one of the next-generation application benchmarks and is designed to more accurately replicate the day-to-day workload that a system is subjected to. The focus of the benchmark is on Internet Content Creation and Office Productivity tasks, which combine to produce a final performance rating.

## Unreal Tournament 2003

UT2K3 is the latest and greatest first person shooter from Epic. The game makes use of the new Unreal Warfare engine, and as such is a perfect benchmark for system performance. We use HardOCP's (www.hardocp.com) benchmarking utility to run a series of flyby benchmarks at varying resolutions to test performance. The utility also features support for a low resolution/high geometry CPU test. Results are in average frames per second.

## 3DMark2001SE Pro

3DMark2001SE Pro from MadOnion.com is the next progression of the popular benchmark utility. It also uses the MAX-FX engine and heavily emphasises DirectX 8.1 functions, including programmable shaders. The results are not comparable with results from 3DMark2000 Pro.

## Serious Sam: SE

Serious Sam: The Second Encounter is used for testing OpenGL performance. For game tests we use the Cooperative demo, which outputs an average framerate trimmed of excessive peaks. It also contains a fillrate test, which outputs fillrates for various texturing methods and is useful for making comparisons between different video chipsets.

## HSF testing – Chernobyl

To test heatsink fans we use our custom engineered CPU replicator, known as Chernobyl. This beastie pumps a variable wattage through a solid Copper CPU die replica, with a temperature probe mounted in the exact centre of the die replica. Chernobyl results are not directly comparable with real world temperatures, but do provide a very accurate benchmark.

## Quake 3: Arena *AtomicMPC* demo

Quake 3: Arena (Q3A), from id Software, is a very popular first person shooter, and represents widely used OpenGL gaming technology. Q3A has a built-in benchmarking utility and built-in demos that can test graphics card performance. These demos are fairly simplistic, so we developed our own *AtomicMPC* demo that pushes the hardware as far as possible.

## Other benchmarks

Sometimes we need to break down the tests into more specific areas, such as hard disc performance, memory performance, or a particular facet of 3D, such as T&L. We can draw on a vast number of applications, games and dedicated benchmarks such as CD Speed 99, DisplayMate, Dronez, MDK2, or Adaptec ThreadMark to perform these tests. We also use a Lian Li temperature probe from Anyware (www.anyware.com.au) for those tests that involve the measurement of temperatures, such as HDD heatsinks.

## *Atomic* HOT Award

The *Atomic* HOT award is given only to the most kickarse products to hit the Labs, ones that score nine out of ten or greater.

## ATOMIC TESTBENCH SPECS

**Both test systems use Windows XP Professional with SP 1, DirectX 8.1 and the latest chipset and video drivers.**

- **AMD Athlon XP 1800+ system – ASUS A7V266-E motherboard (supplied by CASSA:** www.cassa.com.au)
- **Intel Pentium 4 2GHz – ABIT BD7II-RAID motherboard (supplied by ABIT:** www.abit.com.tw)

### Common components

- **Corsair TwinX XMS3200 matched dual-channel DDR RAM (supplied by Altech** www.altech.com.au)
- **Hercules Prophet II GTS 32MB (supplied by Guillemot:** http://au.hercules.com)
- **64MB Apacer memory keys (supplied by Anyware:** www.anyware.com.au)
- **Hercules Prophet II GTS 32MB (Supplied by Guillemot)**
- **Sound Blaster Live! Player (Supplied by Creative Labs Australia:** www.creaf.com)
- **ASUS 52x CD-ROM (supplied by CASSA)**
- **Belkin PCI FireWire card (supplied by Belkin:** www.belkin.com.au)
- **Belkin PCI USB 2.0 card (supplied by Belkin)**

## BENCHMARK SETTINGS

### 3DMark2001SE Pro

- **1,024 x 768; 16-bit colour; 16-bit textures; 16-bit Z-buffer; triple frame buffer.**
- **1,024 x 768; 32-bit colour; 32-bit textures; 24-bit Z-buffer; triple frame buffer.**
- **1,600 x 1,200; 16-bit colour; 16-bit textures; 16-bit Z-buffer; triple frame buffer.**
- **1,600 x 1,200; 32-bit colour; 32-bit textures; 24-bit Z-buffer; triple frame buffer.**

### Quake 3: Arena *AtomicMPC* Demo

**All tests use Quake 3: Arena 1.27g and our custom Q3A demo recorded by the *Atomic* staff.**

- **CPU testing: 320 x 240; maximum geometry detail; minimum graphics settings; high sound quality.**
- **Graphics cards: Low quality – 1,024 x 768; normal quality graphics settings; sound disabled.**
- **Medium – 1,280 x 1,024; maximum graphics settings; with all game sound disabled.**
- **High – 1,600 x 1,200; maximum graphics settings; with all game sound disabled.**

AMD 64 Athlon | DPS K8 | AGP 8X | DDR 400+ | SERIAL ATA

## K8 Triton™ series

## GA-K8NNXP NVIDIA nForce3 150 Chipset

- Supports new generation AMD Athlon™64 processors
- GIGABYTE unique Dual Power System-K8 (DPS-K8) design
- Enhances system performance with DDR400 memory
- Dual LAN solution with Gigabit LAN solution integrated
- Integrated Serial-ATA interface with RAID 0,1 function
- Integrated GigaRAID IDE RAID Interface
- Provides 3 IEEE 1394b FireWire ports

IEEE 1394b | IDE RAID | Dual LAN | USB 2.0 | DualBIOS™ | 6-Channel Audio with UAJ | EasyTune™ 4 | Q-Flash™ | @BIOS™

Intel® 865PE | FSB 800 | AGP 8X | Dual Channel DDR 400+ | SERIAL ATA

## P4 Titan™ *2004 GT Edition*

## GA-8IPE1000 Pro 2 Intel® 865PE/ICH5 Chipset

- Supports 800MHz FSB Pentium® 4 Processor with HT Technology
- New generation Dual Channel DDR400 architecture
- Supports AGP 8X interface for excellent graphics performance
- Integrated Serial-ATA interface
- Integrated T.I. IEEE1394 interface
- Integrated Intel® PRO/1000 CT network connection
- Gigabyte patented DualBIOS™ technology design

IEEE 1394 | USB 2.0 | DualBIOS™ | Xpress³ | 6-Channel Audio | Intel® PRO | Anti-Burn™ | EasyTune™ 4 | Q-Flash™ | @BIOS™ | Multi-Lang BIOS

POWERED BY ATi RADEON VIDEO PRO | AGP 8X | 256 Bit MEMORY | 256MB DDR II | 128MB DDR | PowerDVD 5

## RADEON 9800 PRO GV-R98P256D GV-R98P128D

- Powered by ATi RADEON™ 9800 PRO Visual Processing Unit (VPU)
- Supports the new AGP 8X standard
- Supports the latest Microsoft ® DirectX® 9.X
- 8 parallel rendering pipelines process up to 3 GPixels/sec
- All new 256-bit memory interface
- DVI-I and TV-Out connector supported
- Supports Gigabyte V-Tuner for overclocking

DirectX® 9.X

GA-8KNXP Ultra "Recommended Award" PC Authority May, 2003, Australia | GA-8KNXP "Performance Award" Legion Hardware Jul. 2003, Australia | GA-8KNXP "Editor's Choice Award" PC Guide Jul. 2003, Australia | GA-8PENXP "Value Award" PC Guide Jul. 2003, Australia | GA-8PENXP "Labs Winner" PC Authority Jun, 2003, Australia | GA-7NNXP "Editor's Choice" www.tweaktown.com Jul. 2003, Australia | GV-R98P256D "Hot Award" Atomic Jul. 2003, Australia | GV-R98P256D "Hard Avenue Stamp of Approval" Hard Avenue Jul. 2003, Australia | GV-R98P128D "Editor's Choice" www.tweaktown.com Jul. 2003, Australia | GV-R98P128D "Hard Avenue Stamp of Approval" Hard Avenue Jul. 2003, Australia

COMPUTEX TAIPEI
Sep. 22-26, 2003
See you at TWTC Hall 2 / F189

* These speed settings are not guaranteed by GIGABYTE.
-- The specification and pictures are subject to change without notice.
-- All trademarks and logos are the properties of their respective holders.
-- Any overclocking is at user's risk, Giga-Byte Technology shall not be responsible for any damage or instability to your processor, motherboard, or any other components.

For more information, please call our distributors:

**Australia**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| N.S.W. | HALLMARK | 02-9748-8811 | VICTORIA | HALLMARK | 03-9540-8555 | QUEENSLAND | SYNNEX | 07-3847-8300 |
| | GLOBAL | 02-9644-3900 | | SYNNEX | 1300-880-038 | PERTH | SYNNEX | 08-9204-5700 |
| | SYNNEX | 02-9748-9800 | | | (TOLL-FREE) | | HALLMARK | 08-9477-5440 |
| | RECTRON | 02-9748-7725 | | RECTRON | 03-9561-6166 | ADELAIDE | HALLMARK | 08-8340-3740 |
| | | | | | | DARWIN | HALLMARK | 08-8981-9111 |

**New Zealand**

Black Diamond Technology Limited
64-4-560-9100
Checksun New Zealand Limited
64-9-579-8832

*Upgrade Your Life*™ www.gigabyte.com.tw

GIGABYTE™ TECHNOLOGY

# Framerate

**Don't worry if you can't decide which card to buy. Things aren't as clear cut as performance and quality; there's stability and reliability in there too. Feel free to let things ride for a few months before making a choice.**

## HIS Excalibur RADEON 9800 PRO

**SPECIFICATIONS:** ATI RADEON 9800 PRO; 128MB 256-bit DDR RAM; dual-400MHz RAMDACs; TV-out.
**CORE SPEED:** 380MHz **MEMORY SPEED:** 680MHz **PRICE:** $695
**WEBSITE:** HIS www.hightech.com.hk
**SUPPLIER:** AKA Technology www.akatech.com.au

Merely a slight margin off stealing the crown from the Powercolor 9800 PRO, this card is another top (read: the usual) performing 9800 PRO, coming in at the same price as most. Nothing new here – 'What brand will you choose today?' – should seriously be the jingle that accompanies all these seemingly cloned cards.

## ATI RADEON 9800

**SPECIFICATIONS:** ATI RADEON 9800; 128MB 256-bit DDR RAM; dual-400MHz RAMDACs; TV-out.
**CORE SPEED:** 325MHz **MEMORY SPEED:** 580MHz **PRICE:** $505
**WEBSITE:** ATI Technology www.ati.com
**SUPPLIER:** GameVision www.gamevision.com.au

Slamming the Gainward card in the gob and then some with a price like this, for a mid range card it's almost too good. Even with slower clock speeds, somehow it manages to pull off the performance near that of a 9800 PRO. Being significantly cheaper, it's one damn impressive performer and definitely worth serious consideration.

## Gainward GeForce FX 5900

**SPECIFICATIONS:** NVIDIA GeForce FX 5900; 128MB 256-bit DDR RAM; dual-400MHz RAMDACs; TV-out.
**CORE SPEED:** 400MHz **MEMORY SPEED:** 850MHz **PRICE:** $649
**WEBSITE:** Gainward www.gainward.com
**SUPPLIER:** PC Range www.pcrange.com.au

With faster clock rates, Gainward's card attempts to topple the ATI's 9800, but when the price comes into consideration it simply doesn't put up a worthwhile fight. Even though only cooled by one large heatsink, heat still isn't a problem, as there are two partially screaming fans – both featuring blue LEDs.

## HIS Excalibur RADEON 9200

**SPECIFICATIONS:** ATI RADEON 9200; 128MB 128-bit DDR RAM; dual-400MHz RAMDACs; TV-out.
**CORE SPEED:** 250MHz **MEMORY SPEED:** 400MHz **PRICE:** $165
**WEBSITE:** HIS www.hightech.com.hk
**SUPPLIER:** AKA Technology www.akatech.com.au

Targeted at the budget market – those looking at grabbing a GeForce FX5200 – this 9200 certainly does a great job, bettering on both previous 5200 benchmarks. Relying on passive cooling via its rather boringly styled heatsink, it does emit heat, but not an overly large amount. Only six dollars more than last month's rather *hot* Siluro FX5200, this card is recommended.

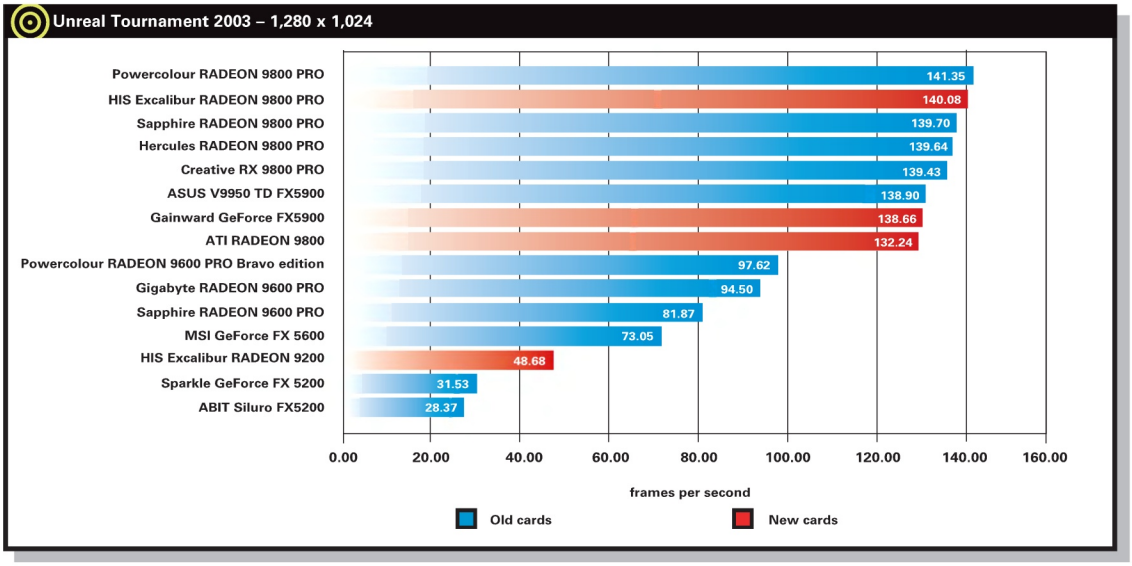
## Video cards

Not much is happening on the video hardware front at the moment, however the background shenanigans involving benchmarking just keep getting more and more interesting, it seems.

NVIDIA has finally rejoined Futuremark's Beta program, which should hopefully ensure that 3DMark03 starts along the long path to legitimacy.

Fingers are crossed that NVIDIA's rejoining of the program parallels AMD's joining of SYSmark overseers BAPCo last year, namely that it is a legitimate attempt to ensure an equitable system of benchmarking, free from the taint of third party optimisations and potentially dodgy results that have plagued 3DMark03 since its launch.

Now we just have to wait to see if this actually happens.

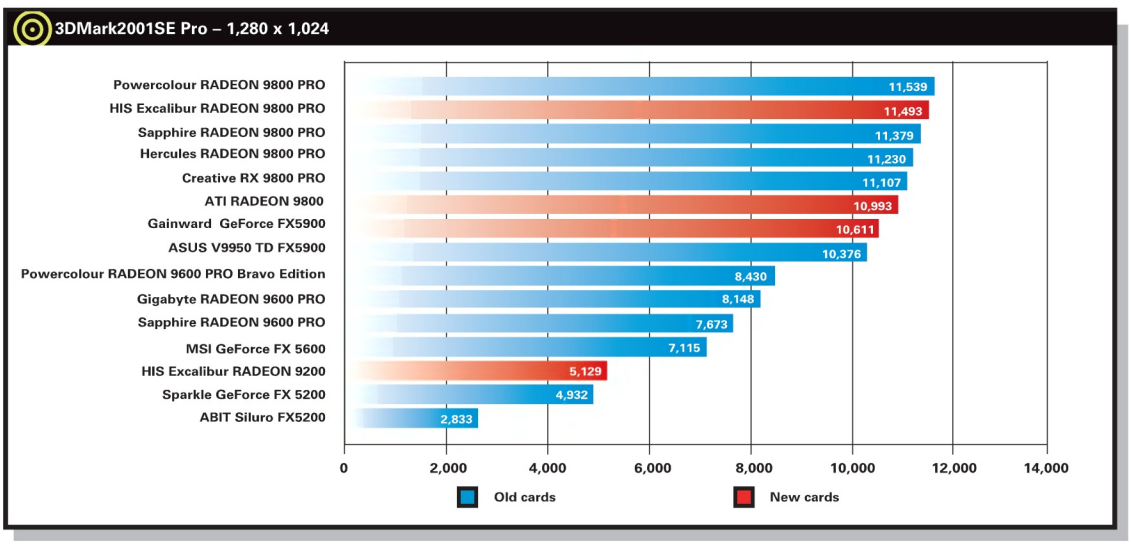



## CPUs

It is time. The wait is over, well, almost. Athlon 64 is set to hit on the 23rd of September 2003, almost a year after it was first touted to be powering our desktop machines.

This is perhaps the biggest product launch in AMD's history, it is the first time that the number two in the chip making realm has launched a product with radically different functionality to competing products.

We are still unsure when the full 64-bit power of the Athlon 64 will be unlocked; expect to be waiting for 64-bit Windows XP for a few more months. But at least the Athlon 64 has finally made the leap from concept to production. Finally.



# Sony Network Walkman NWMS70D <<<

Sony's new titanium bodied Network Walkman NWMS70D is small, strong and well designed, containing a neat 256MB of internal memory, taking Memory Stick Duo memory sticks. The controls are interestingly laid out, one end sports the play/track selectors, the other the volume/sound controls. A sizable lever attached around the top is a hold switch, that disables all buttons preventing accidental pushing. There is one major problem though, that's the lack of a USB port – opting instead for a proprietary dock design. This leaves us in the dark as to why it's a 'Network' Walkman, as it won't be interfacing with anyone else's machine other than yours.

It takes a huge dip with its software. You can't copy your music onto this like a USB key and expect it to play. Terrific, a Walkman that can't play music. Well, not entirely. Music must go through the ridiculous 'check-in/check-out' system Sony has designed – all music must be imported into the software, marked for 'checking out' to the player, and then re-encoded to get there. Having to convert all your music to Sony's proprietary ATRAC3 format is absolute idiocy – blame that on the Digital Rights Management (DRM). Through this software, if you copy music to memory stick or CD you must be verified through the Internet via a digital ID in order to listen to the music. Oh yay. . .

Lack of music quality isn't a worry, as this Walkman's primary perk is its sound. With three levels of bass, it feels good. However, the software overrides the sounds goodness. It's shameful, and reading the manuals are a must if you want to have any idea of what you're doing.

If the software/firmware were to receive a complete overhaul and it was given a USB port, this would be the beast to have.

Otherwise it's just a superbly expensive anti-portable drive with excellent sound and the pestering addition of DRM. As it stands, steer clear of the cow this device is. ND

**SPECS:**

256MB Walkman; Memory Stick Duo reader; USB/charging cradle; 33 hrs playback (48KB/s); MP3, wma and wav; bit-rate support for 48/64/66/105/132KB/s.

$899

Sony
www.sony.com.au

Sony
www.sony.com.au

Sony (02) 9887 6666

SCORE: 4/10

# Hercules XPS-2.100 speaker system <<<

Hercules brought us the impressive XPS-210s and XPS-510 speaker sets. These represented quality at decent prices. Now we see the XPS-2.100 with the XPS-5.100s soon to follow. These speakers are more powerful and prettier to look at.

The satellites incorporate the 2 x 1in neodymium drivers pumping out 12.5 watts RMS each. The satellites can be pivoted on their base, allowing for more control in speaker placement, such as wall mounting above ear level. The subwoofer features a large bass reflex tube, providing frequencies from 30 – 150Hz. This is all a step up from the original XPS range, providing a more powerful, clear and sharper sound than previous models.

Also included in this system is a wired remote which connects to the rear of the subwoofer. This means the sub can be shoved in the corner under your desk where it belongs, as power, volume, bass and treble controls are located on this remote. Headphones can also be connected to the remote which has a piece of Velcro for attaching either onto the side of the sub, or better still, your desk or monitor. The remote sports a nice blue LED when powered on.

We tested on a SoundBlaster Live, across a range of sound types. When playing 192KB/s MP3s at low to moderate levels, the sound quality is quite good. The bass was responsive and not muddy. The mid to upper tones were acceptably full and detailed. As we increased the volume, however, the mid tones started to hollow out, losing some depth and clarity. The bass remained rich and mostly undistorted, but the overall sound quality was less than we expected at these higher volumes.

Similar results were achieved while watching DVDs. Gaming, however, was a different story. Even at high volume, sound was detailed and immersive, with a wide stereo separation and fat pumping bass. Not a bad system from Hercules. They look better than the original XPS system, and would suit most small environments. ND

**SPECS:**

Subwoofer: 35W RMS, 30-150Hz.
Satellites: 2x12.5W RMS, 50-20,000Hz.

$179

Hercules
au.hercules.com

Hercules
au.hercules.com

Hercules (02) 8303 1818

SCORE: 7/10

# Athlon™ XP Processor deals from Rectron

rectron
www.rectron.com.au

**$1399** inc GST

AMD Athlon™ XP

COOLER MASTER

Leadtek Graphics

## Centurion System

- -AMD Athlon™ XP Processor 2500+ systems
- -Gigabyte 7VM400M SocketA Motherboard (or ASrock K7VM4 VIA KM400 MB)
- -512MB PC2700 DDR RAM (KingMax or Equal)
- -40GB IDE Hard Disk Drive (7200RPM)
- -1.44MB Floppy Disk Drive
- -Onboard 64MB (share) Graphic
- -16X IDE DVD Rom Drive
- -Integrated 6 Channel Sound
- -A4Tech Opitcal Wireless Mouse (RP-48)
- -CoolerMaster Q-Alloy Keyboard USB
- -CoolerMaster Centurion Midi Tower Case w/ 300W Power Supply
- -CoolerMaster Musketeer Fan Control Panel
- -CoolerMaster Aerogate1 Sound Control Panel
- -CoolerMaster Aerogate2 Temperature Control Panel
- -Integrated 10/100 LAN
- -Option : Jazz J9911 Speakers / Jazz J8902 Speakers
  Leadtek A350TD MyVIVO FX5900 128mb
  Leadtek A350Urtra TD MyVIVO FX5900 256mb

- -AMD Athlon™ XP Processor 3200+ systems
- -Gigabyte 7NNXP SocketA ATX Motherboard
- -1GB Kingmax PC3200 DDR RAM
- -120GB SATA Hard Disk Drive w/8M
- -1.44MB Floppy Disk Drive
- -Leadtek Quadro FX2000 128kmb
- -16X LG DVD Rom Drive
- -10X2X1 DVD RW Drive
- -Integrated 6 Channel Sound
- -A4Tech Opitcal Wireless Mouse (KBS2348RP)
- -A4Tech Wireless Keyboard (KBS2348RP)
- -CoolerMaster Wave Master Midi Tower Case w/ 300W Power Supply
- -Option: Jazz J8902 Speakers /Jazz J9911 Speakers

## WaveMaster System

COOLER MASTER

Leadtek Graphics

AMD Athlon™ XP

**$5999** inc GST

While stocks last, from your local Rectron reseller :

Melbourne - Nexus (03)9663 9928 - Scopian (03)9561 8088 - Computer Age (03)9874 3333
- CPL (03)9548 7088 - Digitac (03)9563 5355 - XON (03)9642 4133
- Computer Source (03)9348 0338 - Newtech Computers (03)9555 8618

Sydney - PC Quest (02)9709 2355 - ARC (02) 9748 8322
- Microtech Coporation (02) 9648 1818 - Aus PC Market (02) 9746 0900

Rectron :

- Melbourne -
795 Springvale Rd, Mulgrave VIC 3170
Tel: (03)9561 6166 Fax: (03)9561 8722

- Sydney -
21 Vore St, Silverwater, NSW 2128
Tel: (02)9748 7725 Fax: (02)9748 7404

www.rectron.com.au

All service and support for the advertised systems, is provided by the retailer AMD, the AMD Arrow logo, AMD Athlon™ AMD Duron™ and combinations thereof are trademarks of Advanced Micro Devices, Inc

# Emagen Vitesse P4X <<<

Prebuilt machines aren't often in *Atomic*. That is unless they're special. Boxed in a plastic-looking silver case, Emagen have thrown in a tonne of good kit for some potentially great gaming at a low price.

The official World Cyber Games system, we expected reasonable results with an 800MHz FSB 3GHz P4 and a new 128MB RADEON 9800SE. We ran 3DMark2001SE, and in high quality mode it returned 14,037, 10,436 and 7,732 3DMarks for the 1,024 x 768, 1,280 x 1,024 and 1,600 x 1,200 tests, respectively. Incredible results for a stupidly cheap machine. Hot damn.

For cooling, it has two 80mm case fans and a 350W PSU with an additional two fans. The PSU itself has several obligatory blue LEDs in it. A tad on the loud side, it also contains two more fans on the CPU and GPU. But it won't have you screaming 'my bleeding ears!'

This system is quite the overclocker. With its stock Intel reference design cooling, we managed to squeeze a decent splosh of juice out of this baby, upping it to 3.21GHz, and yes, stability-wise there were absolutely no problems. We had it looping the *Atomic* 3DMark2001 quality benchmark dozens of times in software mode at 1,600 x 1,200 with antialiasing set to 6x – not a single artefact to be seen. The only tweaking problem was the lack of a proper memory frequency setter instead of the ratio-to-CPU option.

A special note is the inclusion of six separate DDR channels with the ability to run these in Dual Channel.

For $1,899, this is only the box which is fine. No one likes using the pre-chosen interface devices anyway. Performing rather close to the top of the speed ladder, this is an extremely good buy for a gaming machine sitting at sub-$2,000. Without a doubt, this is one hell of a worthy buy if you're after a cheap, pre-built, yet beastly system. ND

HOT AWARD

**SPECS:**

Intel P4 3.0GHz 800MHz FSB; Intel 875P chipset; 512MB PC3200 DDR RAM; 80GB 7,200rpm HDD; 128MB RADEON 9800SE; 16x DVD drive; LiteOn 52x/32x/52x CD-RW; Antec LanBoy Mid-tower 350W PSU.

$1,899

Emagen
www.emagen.com.au

Emagen
www.emagen.com.au

1300 880 070

SCORE: 9/10

# Shuttle XPC SN45G <<<

We're standing on the brink of a flooding of the small form factor market by the big Taiwanese mobo makers, and it's somewhat appropriate that Shuttle has released the XPC SN45G. Another significant product in the life of the XPC, as it is the first such unit to come without integrated graphics.

The SN45G uses the nForce2 Ultra 400 chipset, which provides greater support and performance than the nForce2 IGP that appeared in previous models.

Until now the XPC has been seen as an all-in-one unit for home theatre and gaming when an AGP card was added. But the SN45G is targeted firmly at gamers and overclockers.

It supports a full suite of overclocking functions for the Athlon XP and the latest 400MHz FSB model Athlon XP chips. Internally it's identical to previous models, with one AGP and one PCI slot. The AGP slot is set next to the side panel, which means the PCI slot obscuring GeForce FX 5900 series will have problems mounting, but the RADEON 9800 series will work just fine.

We tested the unit with an Athlon XP 3200+ and 512MB of Corsair memory, and we came across a major issue. Like some other nForce2 products it has huge problems operating with Corsair DDR memory, refusing to boot, causing no end of problems – a switch to different RAM meant the system ran fine.

Apart from that the unit performed like a dream, keeping up with ATX nForce2 Ultra 400 systems. The XPC is great for overclocking but beware of heat issues when overclocking a small form factor system in an Australian summer. Shuttle's ICE cooling technology is great for keeping the Athlon XP cool, but heatpipes are only as good as the ambient temperature allows. Forget home theatre, the XPC SN45G is a viable desktop PC replacement. It restricts expandability to one PCI and one AGP slot, but it packs ridiculous power into a tiny little package, and that's very tempting indeed. JG

HOT AWARD

**SPECS:**

nForce2 Ultra 400; AGP 8x slot; 5.1 audio; 10/100 Ethernet; ICE heatpipe cooler; overclocking controls.

$459

SATO tech
www.satotech.com.au

Shuttle
www.shuttle.com

(02) 9748 2999

SCORE: 9/10

XSONIC™

# Let your imagination come to life with case mod

Xaser III V4000A
Aluminium Silver
**RRP$359**

EZ-8000
Smart Office Keyboard Silver
**RRP$59**

Scorpio 868WU Blue
**RRP$159**

Distributor and Supplier of Quality & Economical PC Enclosures...
"Where Technology, Quality & Price - Never Compromise"

X Sonic 7727 *RRP$ 89

Xtreme A28K-3W Black *RRP$149

EZ-8000 Smart Office Keyboard Blue *RRP$ 59

AM-2000 *RRP$45 AM-2100 *RRP$43

Optical Travelmate *RRP$ 39

**UNIVERSAL ENTERPRISE**
(AUSTRALIA) PTY LTD
A.B.N. 24 099 267 026

www.universalenterprise.com.au

**HEAD OFFICE**
Ph: 07-3397-8266
Fx: 07-3397-8950
28 Harries Rd, Coorparoo,
QLD 4151, Australia

**Townsville**
Ph: 07-4721-3700
Fx: 07-4721-5522
155 Ingham Rd, West End,
Townsville, QLD 4810, Australia

**Premium Resellers / QLD**

GAMEDUDE COMPUTERS
Ph:07-3387 1500
sales@gamedude.com.au

QUEENSLAND COMPUTER GROUP
Ph:07-3846 0888
sales@qcgo.com.au

Mr. CD-R
Ph:07-3889 8686
Sales@mrcdr.com.au

**NSW**

PIONEER COMPUTERS AUSTRALIA
Ph:02-9690 2888
sales@pioneercomputers.com.au

Fully Loaded Computer Supplies
Ph: 08-8088 4255
sales@fullyloaded.net.au

**Victoria**

C.W Supplies
Ph: 03-5945 2000
sales@cws.net.au

Scorpion Technology
Ph: 1300 726 770
sales@scorptec.com.au

# Billion 743GE wireless ADSL router <<<

Around 18 months ago, a company called Billion delivered the BIPAC 711CE to the ADSL/router market. What was so surprising about this device was its price; for less than $200 you could pick yourself up an ADSL modem with router functionality, including all the frills you'd only expect from a more expensive package. The only thing that let it down was the clunky Web interface and the Connexant chip it used that made flashing its firmware complicated and troublesome.

Billion has more than made up for these shortfallings with the 743GE. Along with an in-built firewall and wireless capabilities, the 743 comes with a much improved Web interface. While it's still tricky to navigate and many of the options aren't marked descriptively, everything you could need is there, from limiting the speed of the Ethernet ports on the router itself to TCP/UDP port, keyword and address/domain filtering.

Included in the packaging is sufficient cabling to hook the router to your computer/switch and your phone line, and there's four Ethernet ports along its back so you can jack some systems straight into it. Another bonus is the 'instant update' for most of the features. When a setting is changed in the interface, it's automatically applied without resetting or flashing the modem. The firmware update is also improved over the 711; it's simpler to use and there's now a progress bar. Other minor touches include an on/off switch, better-labelled indicator lights and solid construction.

Currently, the 743GE is packaged with a bland manual and an equally plain CD. PC Range, Billion's Australian distributor, has assured us that by the time you read this, a thorough manual will be included, along with an electronic copy on the CD. An updated firmware will also be available that adds more functionality to the Web interface. If you plan on buying this router, be sure to ask about these points.

Whether you care about manuals or not the price is hard to dismiss. For $299, you get a reliable four-port ADSL modem/router with a stack of configuration options; it's the embodiment of value for money. LB

**SPECS:**

**ADSL modem and router; in-built firewall; four Ethernet ports; Web interface; port, address, keyword and domain filtering.**

**$299**

**PC Range**
**www.pcrange.com**

**Billion**
**www.billion.com.au**

**PC Range (08) 8322 9544**

**SCORE: 8/10**

# CMV CT-722A Multimedia TFT <<<

It's confirmed; those sweet thin TFTs are starting to shake off their bad old habits and mature enough so that gamers might actually consider grabbing one. 16ms is the slowest response time you'll want for a gaming TFT, and the CT-722A does just that on 17in. This is the newer sibling to the Polyview CMV 1515 we looked at two issues back (*Atomic 31*), and apart from being two inches larger, the only difference is the increase in response time by one millisecond.

With its average contrast, it isn't aimed at the professional graphic designer; this stylish display is targeted at the home/office market sector.

Weighing in at a light 4.3kg, it uses an external power supply – a minor annoyance, as an internal one would have been less messy. Connection-wise it uses the standard D-Sub, with an additional DVI input connector available on the CT-722D model.

Its standard resolution is a decent 1,280 x 1,024 – displaying crisp, sharp colours all over. Although its colour doesn't go as deep as the amazing CMV 1515, with a few darker shades of colour dropping off as black. Of note are the borders around the screen losing colour – not noticeable unless the entire screen is one colour, but this suggests a backlight issue.

Its 450:1contrast ratio is lower than a few cheaper TFTs – not a huge issue but it lessens the 'wow' factor. At its native res, crisp imagery can be displayed – but colour depth lets it down.

In testing with the Quake 3 and UT2003 sessions, the usual blur was more noticeable, albeit only slightly, on this display because it's larger. It was still quite playable, but occasionally you might lose track of what you're aiming at when there's a lot of up-close action. Like a FPS game.

Overall, this isn't a top TFT, but still useable. What nags at us is the price/value factor – it's not overly cheap nor full of enough goodness to rave on about like the CMV 1515. Thankfully, with TFT prices dropping, we'll soon be seeing decent 17in TFTs hitting low prices. Ignoring the price, for its crisp and sharp display, grab this for the office, as that's where it'll really shine. ND

**SPECS:**

**17in TFT; 450:1 contrast ratio; 400cd/m2 brightness; 1,280 x 1,024 max native res; 16ms response time; D-sub; speakers.**

**$897**

**Impact Systems**
**www.impactsystems.com.au**

**Impact Systems**
**www.impactsystems.com.au**

**(02) 9621 2999**

**SCORE: 7.5/10**

# www.scorptec.com.au

# scorpion TECHNOLOGY

## ONE STOP SHOP FOR YOUR COMPUTER NEEDS

WE DELIVER AUSTRALIA WIDE INCLUDING TASMANIA, CASH/CREDIT CARD/COD/DIRECT DEPOSIT PAYMENT ACCEPTED

Established since 1998

**SIMPLE FACTS**

-GREAT PRODUCTS
-GREAT PRICES
-GREAT SERVICES
-WE DELIVER!

EXPERIENCE IT TODAY!

FOR MORE PRODUCTS INFORMATION AND LATEST PRICES VISIT OUR WEBSITE NOW!
WWW.SCORPTEC.COM.AU
SALES TOLL FREE
1300-726-770

Antec The Power of You

Lian Li Industrial Co., LTD

Thermaltake

V2000+ Aluminum Series: V1000C Blue Series V1000+ Black Series

COOLER MASTER

Logitech

ZALMAN

AOpen

H600A H600B(black)

CREATIVE

CORSAIR

Kingston TECHNOLOGY

MSI MICRO-STAR INTERNATIONAL

KINGMAX Semiconductor Inc.

LITEON

ABIT Your Reliable Partner

ASUS

GIGABYTE TECHNOLOGY

AOC EYES ON VALUE

APC Legendary Reliability

AMD

intel

EPoX

Leadtek We Make Dreams a Reality

LINKSYS

D-Link

NETGEAR

Albatron

ECS ELITEGROUP

Microsoft

canopus

acer

SENNHEISER

hp invent

LG Electronics

MITSUBISHI ELECTRIC

EPSON

PHILIPS

Canon

SAMSUNG ELECTRONICS AUSTRALIA

POWERCOLOR

SONY

SAPPHIRE

Hercules

adaptec

BenQ

PROMISE TECHNOLOGY, INC.

Pioneer sound. vision. soul

VISIT OUR WEBSITE FOR LATEST PRICING AT:

Www.scorptec.com.au

AUSTRALIA'S PREMIERE ONLINE COMPUTER SHOP

**SCORPION TECHNOLOGY COMPUTERS Pty Ltd.**

WAREHOUSE DISTRIBUTION CENTRE:
Unit 4/2 Garden Rd, Clayton
Vic. 3168. Melbourne
Ph: 9561-8088 Fax. 9561-1688
Email: sales@scorptec.com.au

***TRADING HOURS:***
MON - FR I: 10AM- 6:00PM SATURDAY : 10AM - 3PM, SUNDAY : CLOSED
DIRECT DEPOSIT BANKING DETAILS: BANK OF MELBOURNE **BSB: 033-385 ACCOUNT NO: 212-477**

Prices subject to change without notice. Errors & Ommissions excepted. Advertised price are strictly for CASH/BANK CHEQUE only.All logos and brands are trademarks of the respective companies. All major credit cards accepted, as advertised prices are cash/EFTPOS only, 2% surcharge applies for visa/mastercard, 4% diners/amex payment. (C-2003-7-24). We offer full manufacturer warranties, always checkfor warranty terms when you see prices that are cheaper elsewhere.

# ABIT Siluro FX5900 OTES <<<

**Better out than in, says John Gillooly with a smirk.**

HOT AWARD

Over the past few generations of 3D hardware there has always been a sweet spot in the price/performance stakes. We saw it with the cheap and effective GeForce2 MX line, we saw it with the stellar GeForce4 Ti4200 and ATI's RADEON 9700. Cut down versions of top end 3D hardware are commonplace now, and at first glance the GeForce FX 5900 is still not cheap but shares everything except clock and core speeds with the several hundred dollars more expensive Ultra variants.

ABIT has used the GeForce FX 5900 as part of its latest experimentation in cooling, the OTES Siluro FX 5900 card. ABIT invented the concept of externally vented video card cooling with its GeForce4 Ti4200 card, a concept that was subsequently picked up by NVIDIA as the reference cooler for its heat pumping GeForce FX 5800 chip. Most will agree that the FX 5800 was not an ideal way to introduce this sort of cooling to the masses. It was too loud, still ran hot, and the cards lacked the performance needed to compete with the whisper quiet RADEON 9800.

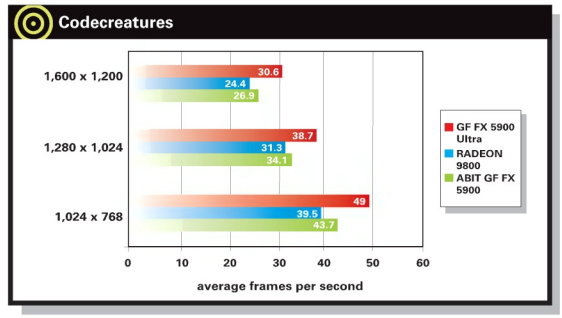
The GeForce FX 5900 needs hefty cooling, but managed to avoid the externally vented suicide route its predecessor took. Despite this, ABIT has taken the opportunity to show us again what the potential of its OTES system is by using the technology to make a cool, quiet card, laden with overclocking potential.

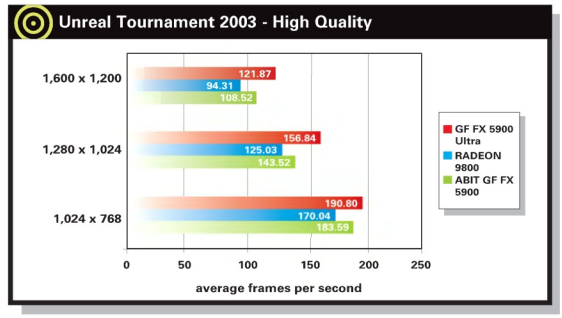
A unique thing about the new OTES implementation is the inclusion of the 'Beetle Tube' – a segmented plastic vent designed to modify air pressure so that the air rushes out quicker, while also reducing the noise output. In fact that is the most impressive part of the FX5900 OTES card – it's so quiet it was barely heard over the modest noise of an Intel Pentium 4 heatsink. This silence is a welcome change from the previous generation and is a big selling point for those after a quiet computing experience.

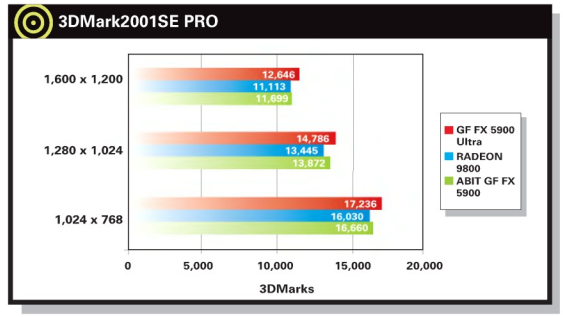
Perhaps the only major downside is that the card blots out two PCI slots, which is a pain in the arse for Micro ATX users but bearable for those blessed with a full complement of PCI slots. With cards in the top PCI slot usually abutting the video card, and the second PCI slot subject to the hell of shared IRQs with the IDE controller we recommend them as a last resort anyway.

We tested the FX5900 OTES against ATI's equivalent RADEON 9800 card and NVIDIA's top-end GeForce FX 5900 Ultra. Testing was done using NVIDIA 44.03 Detonator drivers and ATI Catalyst 3.6 drivers on a 3GHz Pentium 4. To get the obvious out of the way first, the Siluro FX5900 OTES is slower than as a GeForce FX 5900 Ultra. But as the performance gulf is fairly minor across our tests, this makes the Siluro FX5900 OTES a tasty alternative, especially when you consider the notable price difference.

Compared to the vanilla RADEON 9800 card, the FX5900 looks impressive, winning in every benchmark by small but clear margins. In the current market the RADEON 9800 is cheaper than FX5900, but we suspect pricing will even up pretty quickly.




Yet again ABIT has delivered a unique product that actually delivers. OTES provides the cooling needed for the GF FX 5900 while staying damn quiet. Plus the oddly segmented venting system makes for one of the most aesthetically interesting cards on the market. Now that parity has been reached between ATI and NVIDIA's product ranges the choice is wide open, and the Siluro GF FX5900 OTES fits its niche like a glove.

JG

**SPECS:**

NVIDIA GeForce FX5900 GPU; ABIT OTES cooling system; 128MB DDR RAM; TV-Out; DVI

$716

Altech
www.altech.com.au

ABIT
www.abit.com.tw

Altech (02) 9735 5655

SCORE: 9/10

# Hercules RADEON 9600 256MB <<<

**Hitting his kephale, Greek god wannabe, Nathan Davis, doubles his mneme.**

With many high-end video cards now equipped with 256MB of RAM, there's little wonder we are beginning to see other slower cards chocked with a double serving of memory. As you probably know, more video memory won't give you an immediately noticeable increase in performance, unless you pump out some seriously stressful tests like high resolutions and massive textures.

Right now, there isn't much out there that will make full use of this amount of memory, and it's used as a selling point to unsuspecting folk, but eventually it should serve us well.

Aimed at the mid-range market, 128MB 9600 RADEONs are far more affordable than the higher-end cards, and they provide performance results that don't rock, but they're great for mini PCs and the like.

This 256MB incarnation is quite interesting in regards to its cooling design. At first it appears severely under-cooled, with such an incredibly small heatsink, but this is definitely not the case. Amazingly, even when under full load whilst testing the card, it remained chilly to the touch – quite incredible. Unless it was an awesome guess, the cooling must have had a great deal of funky research put into it. Even for a 9600, a .13µ card featuring cooling this chilly is fully commendable.

With this cool factor comes a high-speed fan. Sure, it has some sound to it, but unlike many FX cards, your ears aren't strapped to the inside of a Lear jet's engine.

As you may have read from last month's review of the Albatron FX5600EQ (*Atomic 32, page 62*), the memory clock speeds of the 256MB version of the GeForce FX5600 range of cards have been stupidly slowed down. Even though the core was increased in a vain attempt at speeding the card up, the performance we're after comes from faster memory, not the core and this lead to a more expensive, yet slower product.

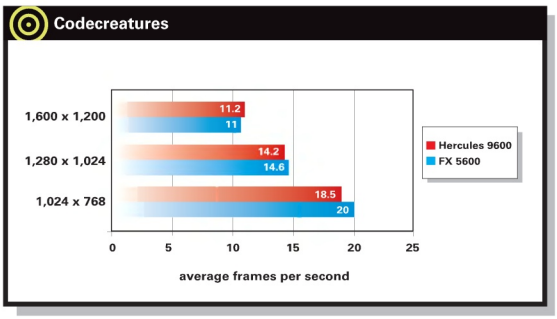
With the 256MB version of the RADEON 9600, the clock speeds are no different to each other, both with a core of 325MHz and memory speed of 400MHz. A wise decision, in theory, but only for those who can use such a large memory.

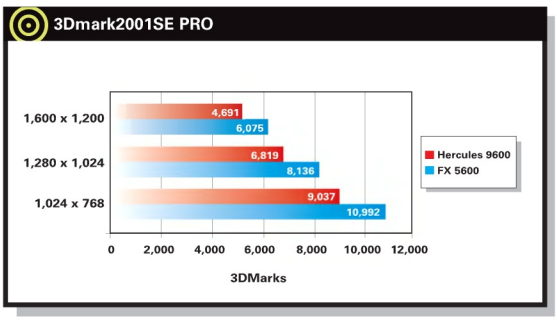
With the same memory speed and core clock as its 128MB sibling, we have good reason to believe this performs almost the same if not identically. Being our first review of a 9600 non-PRO, we can only speculate, but according to the *Atomic* Spy Ring(tm), it seems to perform around the same as that of the 128MB card. We aren't one bit surprised.

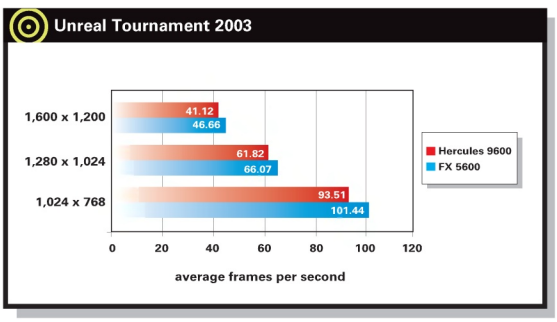
The bonus is that you do notice a decent improvement in performance on higher resolutions. This shows in our bench test results, racking it up against a 128MB GeForce FX 5600, it comes in a few margins lower in all tests bar the most stressful – Codecreatures at 1,600 x 1,200 – albeit, at one fifth of a frame.

It comes out on top when extra memory is put to use in large textured, high-res scenery but the problem is gameplay is simply not possible at such settings, which completely pisses all over any memory advantage it may have had.

If you're looking for a mid-range video card that's a decent performer and weighs up fairly well in terms of both speed and low temperature, this will do the job. But unless you require a chilly card, investing in a more powerful, yet cheaper, FX 5600 card might be in your interest. ND




**SPECS:**

ATI RADEON 9600; 256MB DDR RAM; 325MHz core clock; 400MHz memory clock; TV-out.

$399

Hercules
www.hercules.com

BCN Technology
www.bcntech.com.au

(02) 8303 1818

SCORE: 7.5/10

# NVIDIA Quadro FX3000 <<<

**Ivon Smith wants pro level graphics grunt, can NVIDIA provide?**

HOT AWARD

Recently, graphics goliath NVIDIA released a new line of graphics cards to serve the professional CAD, DCC and large format display market. Based on the latest FX GPU architecture, these additions to the Quadro series are aimed at the high-end (FX3000), entry-level (FX500) and large format display arenas (FX3000G Genlock version), which is presently dominated by the SGI Reality Centre.

This review looks at the features and performance of the high-end product aimed at superseding the existing Quadro FX2000 128MB card (reviewed, *Atomic 29*).

The FX2000 is an amazing graphics card for 3D design, visualisation and animation. Until very recently, it pretty much ruled supreme in the performance stakes for applications like 3dsmax, SoftimageIXSI, Maya and the more industrial design-oriented Unigraphics and ProEngineer 3D programs. The figures it has spat out of industry standard benchmarks like SpecViewPerf have largely been unrivalled.

Based on the ill-fated FX5800 GPU, the FX2000 at only 128MB was obviously looking threatened in NVIDIA's eyes by ATI's new 256MB Fire GL-X2, or even 3dlabs Wildcat VP990 Pro sporting a superlative 512MB of onboard RAM.

Not ones to be outdone by the competition, NVIDIA have come up with the Quadro FX3000. Based on the much more successful FX5900 GPU, it features 256MB RAM; a new 256-bit memory interface; over 27GB/s theoretical graphics bandwidth; 128-bit floating point precision graphics pipeline; 128-bit colour; 12-bit sub-pixel accuracy; 16xFSAA; 3D volumetric textures; can display resolutions of up to 3,840 x 2,400; and supports all the display enhancements in the latest versions of Cg, OpenGL 1.5 and DirectX 9.0.

Sounds great, doesn't it? Well, yes and no...
So hasty were NVIDIA to release this card to market, the driver base has not been worked on with quite as much gusto. The Quadro cards have long had application specific drivers that have done a brilliant job enhancing display features and 3D performance, such as the certified 3dsmax (v.43.03) and MaxTreme (v.4.00.29).

In benchmarks and real world performance these can improve things by up to 30 percent. The FX3000 and FX500 cards only worked with the generic Quadro drivers v.44.71. Still, it's an amazing testament to NVIDIA's hardware development speed and ingenuity when you look at the performance figures for this new, albeit somewhat crippled, Quadro FX3000.

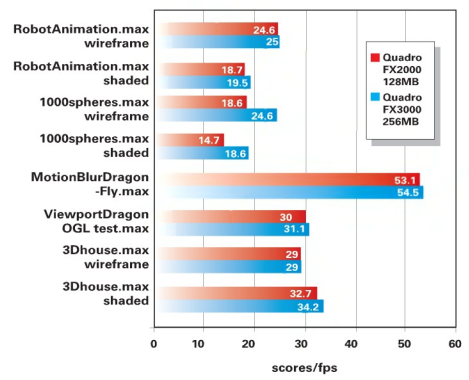
Stacked up against the FX2000, this new card managed to win in all bar two benchmark tests in SpecViewPerf showing performance improvements of up to 12 percent.

In the real world 3dsmax5.1 custom benchmark tests from high polygon scenes to texture heavy character rigs, lighting, IK animation and viewport transparency, the FX3000 won all eight tests, albeit modestly.

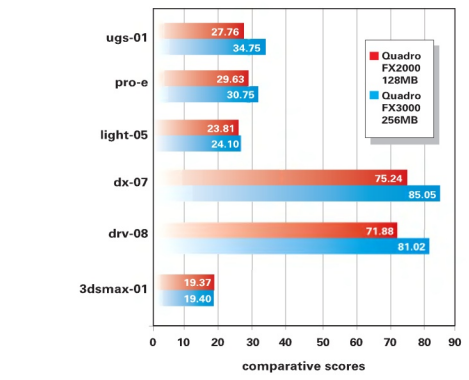
Overall 3dsmax5.1 performance was pretty smooth and reliable, and the FX3000 does outperform its over-achieving earlier incarnation. After professional drivers are fully developed we'd say the FX3000 may be worth that extra eleven hundred bucks!

IS

**3dsmax 5.1 Viewport Animation test**




**SpecViewPerf v.7.1**




**SPECS:**

NVIDIA Quadro FX3000 GPU; 256MB memory; Application specific certified drivers; Dual display.

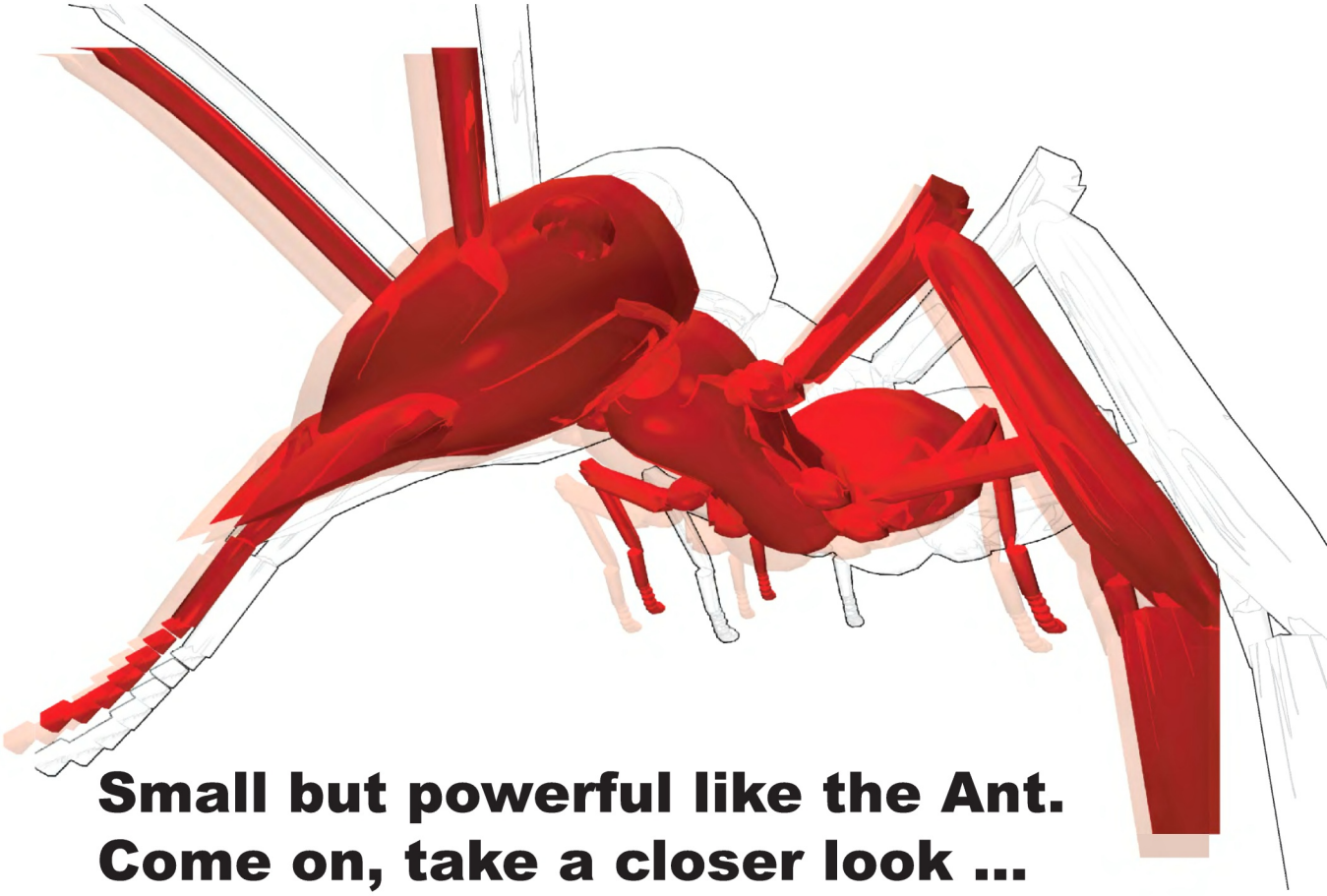
$3,999

BCN Technology
www.bcntech.com.au

Leadtek
www.leadtek.com

(02) 9648 0039

SCORE: 9/10



# Small but powerful like the Ant. Come on, take a closer look ...

## Products
- PC hardware
- PC software - educational & business
- PC accessories

## Services
- Online ordering
- Custom built systems
- Secure gateway
- Competitive pricing
- Reliability
- Excellent customer service

## Address
- U-Bute Computers
  PO Box 8480
  Carrum Downs VIC 3201

- Telephone/Fax: (03) 9766 5766

## Office Hours
- 9.00am to 5.00pm Monday - Friday (closed Saturday/Sunday & Public Holidays)

**www.u-butecomputers.com.au**

Date established : 2001

U-Bute Computers
The Right Choice!

# Philips 150P4cs LCD Monitor <<<

Philips let us have a play with the new 150P4cs 15in LCD monitor. Lucky us, 'cos it rawked. A simple, compact design on a double-hinged base, the Philips 150P4cs supports both analogue and digital inputs, although only an analogue cable was supplied. Power is via a standard cord, with no bulky transformer required.

On screen monitor controls are managed via four unobtrusive buttons on the bezel, which is relatively standard fare. What this monitor does have, however, is a feature called 'Light Frame', which is available after installation from the supplied CD-ROM.

The purpose of 'Light Frame' is to automatically identify where images or video are on the screen and brighten just those areas. It is actually fairly clever at picking from a mix of image and video types on the screen, without affecting the rest of the display. This is handy for those who work with various media types, but the actual implementation is perhaps a little clumsy.

The interface to switch the feature on and off was difficult to manage. For example, we loaded a page from the Internet and the various images were identified and highlighted. But when we deactivated the Light Frame, and scrolled the screen, even just a bit, the images would be redetected and highlighted again. Worse, however, was that any windows that were opened over the top of any highlighted images displayed the highlighted area of the image underneath. . . anoying.

At the moment, we have mixed feelings about this technology. Whilst we understand it does have value in some situations, it became rather annoying and we eventually switched it off.

Apart from Light Frame, the monitor itself was quite the performer. Hooked up to an ASUS Ti4600, we viewed some DVD video, 2D and 3D rendered graphics and played a game or three. The images were sharp and clear without any of the colour banding noticeable on lesser models. We also found that the image remained clear and focused regardless of the viewing angle. The monitor is non-bulky and lightweight, perfect for those who would like to drag it around to LAN parties. SP

**SPECS:**

Maximum Resolution – 1,024 x 768; Brightness – 250cd/m2; Pixel Pitch (mm) – 0.297 x 0.297; Horizontal Scan Frequency – 30-61Hz

$799

Philips
www.philips.com.au

Philips
www.philips.com.au

1300 651 993

SCORE: 8/10

# Tyan TACHYON G9600 PRO <<<

HOT AWARD

ATI made quite a racket about the shift of its business model from card maker to graphics chip supplier a year or two ago, but in reality this has had little impact on the card production process. Nearly every single RADEON 9800 and 9600 series card has come from the same factory, despite the branding, but one company has taken it upon themselves to implement its own card designs.

That company is Tyan and the redesigned board layout has been done to enable the inclusion of hardware monitoring. And not just some poxy little temperature probe either, the TACHYON G9600 PRO is capable of monitoring temperatures, fan speeds and voltages on both the core and memory chips. It adds heavy duty features like a damn loud beepy alarm that kicks in if your fan dies, and the monitoring is all linked in with overclocking software.

Performance-wise, the TACHYON G9600 PRO performs just like any other RADEON 9600 PRO. It has the same 400MHz core and 600MHz memory speed as other cards, but it differentiates itself through the hardware monitoring features, which make it one of the most robust video cards to have passed through the *Atomic* labs. We found the core to have damn nice overclocking headroom, running stably with a core speed of 520MHz but the memory speed could only be pushed to 630MHz in Tyan's monitoring software.

The TACHYON G9600 PRO is a welcome addition to the market, showing that innovation in the video card manufacturing realm does still exist. Rather than being a useless novelty item, the hardware monitoring is very handy. Overclockers will probably shirk at the low RAM overhead but if you want a card with a long, reliable lifespan, then Tyan has delivered a doozy. JG

**SPECS:**

ATI RADEON 9600 PRO; 128MB 128-bit DDR RAM; hardware monitoring functionality

TBA

Altech
www.altech.com

Tyan
www.tyan.com

Altech (02) 9735 5685

SCORE: 9/10

JOLT Cola

***JOLT COLA** is made from premium quality ingredients and contains: **NATURAL CAFFEINE, NATURAL FLAVOUR, NO PRESERVATIVES** and surprisingly less calories than other cola brands. With twice the caffeine it's a refreshing alternative to coffee and delivers a great taste and a thirst-quenching boost. JOLT COLA is a true lifestyle beverage for just about anybody who burns the midnight oil.*

**www.joltcola.com.au**

# PUMP UP THE POWER OF YOUR DIGITAL CAMERA WITH MITTONI 40x *UltraSpeed* FLASH MEMORY

As the **only** Australian member of the CompactFlash Association, our cards are **guaranteed** to be fully compatible with **any** device that accepts CompactFlash storage cards

***RESELLER ENQUIRIES WELCOME***

## USB *Flash* Pen Drive

**Transfer data in your pocket or your keychain!**

apc EDITOR'S CHOICE DEC 2002

| | |
|---|---|
| 64MB | $55 |
| 128MB USB 2.0 | $81 |
| 256MB USB 2.0 | $143 |
| 512MB USB 2.0 | $286 |

## CompactFlash

| | |
|---|---|
| 128MB 40x | $73 |
| 256MB 40x | $122 |
| 512MB 40x | $243 |
| 1GB 40x | $488 |
| 2.2GB | $697 |

## Secure Digital

| | |
|---|---|
| 128MB | $105 |
| 256MB | $177 |
| 512MB | $499 |

**...plus more!**

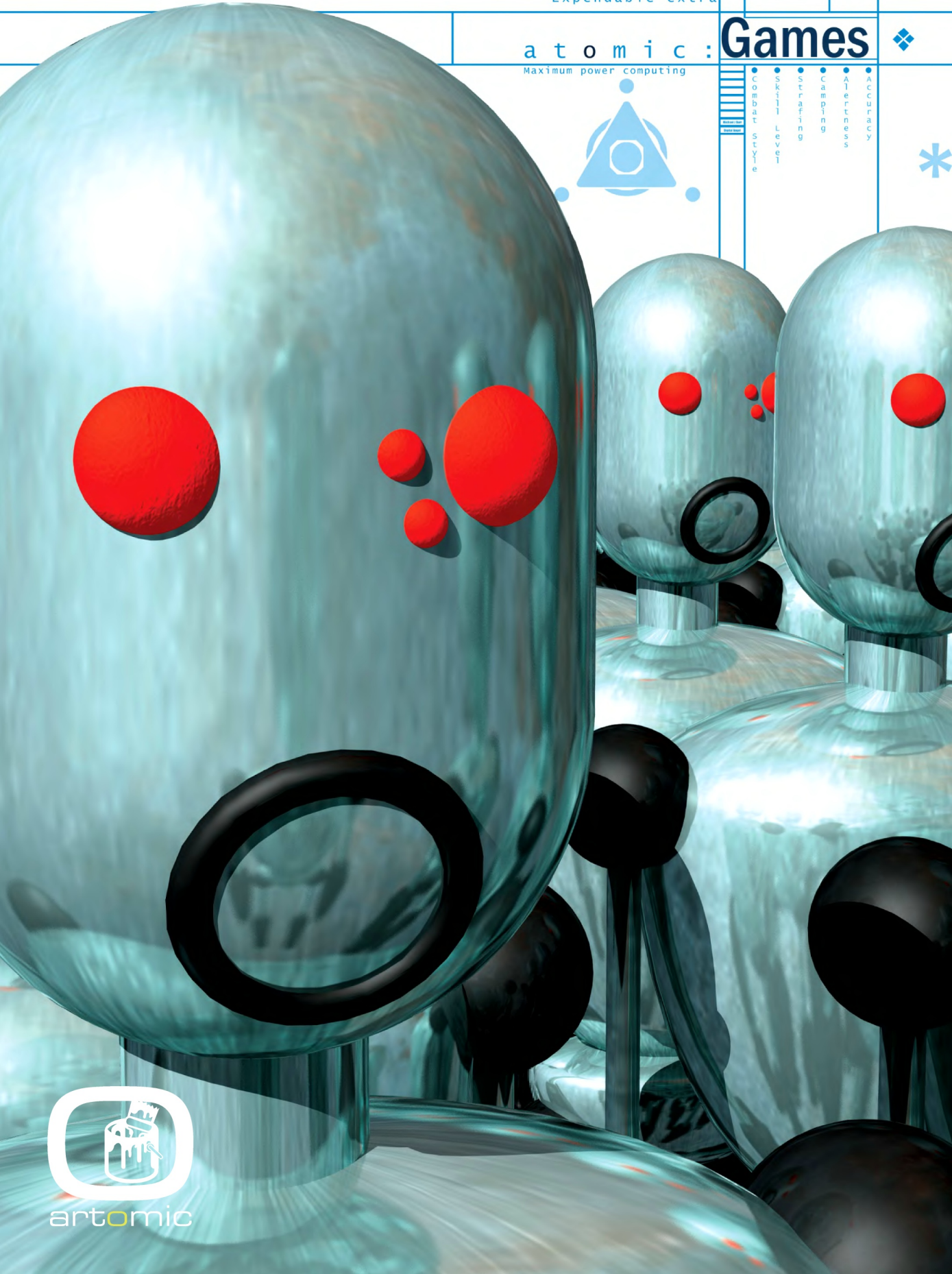
Refund or exchange offered whatever your brand of camera or digital device for maximum piece of mind with your purchase

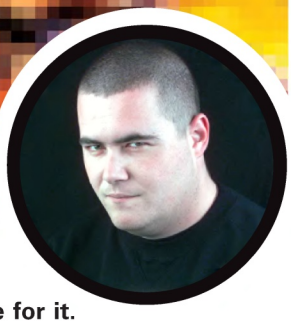
**402 Ferntree Gully Road**
**Notting Hill, Vic 3168**
Telephone (03) 9560 6100

**www.mittoni.com.au**

Mittoni Pty Ltd is an authorized licensee of the CompactFlash™ and CF™ trademarks.

All brands or product names are trademarks of their respective owners


Expendable extra
atomic: Games
Maximum power computing
Combat Style
Skill Level
Strafing
Camping
Alertness
Accuracy
artomic



# Halo goodbye

**John Gillooly loves to speculate, but there is always a time and a place for it.**

Recently I have been playing around with a preview version of FireFly studios' new game Space Colony, which is shaping up to be a pretty cool car crash of the Sims, various Theme titles and Red Dwarf. It's certainly early code but it's already enjoyable. The only thing that shits me is the current build has a graphical glitch with some video cards that is so prevalent that it's damn annoying at times.

But it is an early build, so bugs like this exist. I don't think anyone would entertain the notion that a developer of the calibre of FireFly would even think of shipping a game with such an obvious bug. It is one of those things inherent in early game code and trust me, it's not the first lot of early code that we have seen with bugs like this and it certainly won't be the last.

You can see the graphical progression of a game through the screenshots released over the game's development. It is a long involved process, and like any piece of monumental coding, glitches will happen, problems will come up and they will invariably be fixed.

What really sickens me though, is when pre-release software is used as a baseball bat to bludgeon hardware manufacturers. It happened last year when Dr Derek Smart PhD started another of his deluded diatribes about how the removal of support for W-buffers and 32-bit Z-precision in RADEON 9xxx series cards was nothing short of criminal and had completely broken his latest Battle Cruiser iteration. Apparently W-buffering never really worked properly anyway, and more superior methods have since been found to achieve the same results. So Microsoft took it out of DX 8 entirely. And throughout the entire 425 post-flame war on the Beyond 3D forums, members of ATI's driver development team were actively helping him solve his problems and find workarounds.

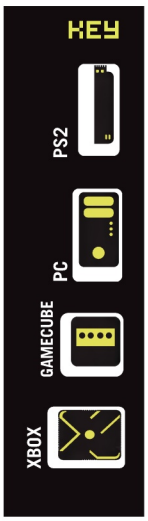
This is why I wasn't surprised when a storm in a teacup arose over glitchy antialiasing performance in Half-Life 2. Naysayers were crying that we would be completely unable to use antialiasing due to methods used to generate high resolution textures which would lead to significant visual artefacts. While neither NVIDIA nor ATI has currently active support for the techniques Valve envisaged would be used for a workaround, apparently ATI's architecture had the better partial implementation.

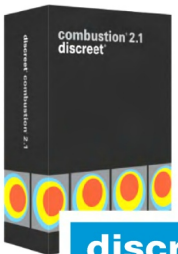
This translated to a knee-jerk 'NVIDIA cards are gunna suck in Half-Life 2' cry from many out there. This is fair enough if we are talking about huge glitches in a game that has been released. But we are talking about developer comments on issues experienced in a game that has so far only been played by a few dozen people.

When we last talked with NVIDIA's chief scientist Dr David Kirk, he made this statement: '3D is all about cheating without getting caught'. Sure enough, there are workarounds. The first, which ATI cards can support, is centroid antialiasing and the second, which will work on both NVIDIA and ATI cards, involves the use of the shaders to clamp the image pre-antialiasing. Sorted.

Looking deeper into the problem you find that this is actually an issue that has plagued many games over the years. Just look closely at Max Payne's hair when AA is enabled, or fire up the pixel shader 2.0 test in 3DMark03 with antialiasing on. In fact, the same issue also affects Quake or any other game that uses lightmaps. Visually it translates to barely visible white pixel flashes along the edge of an object, sometimes only one or two pixels and sometimes more halo-like. Severity increases with higher texture resolutions and the almost anal attention to image quality that Valve is putting into Half-Life 2. But as Gabe Newell from Valve software recently said on the halflife.net forums, 'To put this in perspective, not doing tri-linear filtering on mipmaps is a lot worse.'

Using this glitch to infer eventual video card performance is dangerous and quite frankly pointless. There is a reason that developers go through alpha and beta testing on new software and it is to do just what Valve has done. Identify the bugs and squash them. Until the final code hits the streets, why don't we just let Valve get on with making the game rather than suddenly basing your video card buying decisions on a problem that is not even an issue anymore?






discreet combustion

## ARTOMIC

*'Gamers Best Friend' by Michael 'Seraphsys' Burr*

The mecha started out with some freestyle modeling in LightWave 7, I had a decent idea of what I wanted to do with the model after playing 'Timesplitters 2' and watching '*The Second Renecaunce Part I*' (*Animatrix*). Once I had the model finished I started with the texturing. Then using Photoshop 7 I made a random rusty metal image and then added the surface properties. After many small test renders the formation and angle were just right. Seven hours later the final 2,539 x 3,567 pixel image finished rendering. Then it was taken express to Photoshop 7 to add the eye candy and text.

**Create the winning Artomic and win the latest verion of combustion, valued at $1,995, from discreet! Email a preview (no larger than 5MB) of your games or hardware-themed masterpiece to artomic@atomicmpc.com.au.**

## SHORT CIRCUITS

**The big question on gamer's lips is whether the September 30 Half-Life 2 launch is still going to happen. This became even more intriguing when Valve recently announced that the long running beta of it's Steam distribution software was due to end around the 10th of September, at which point the full version would come online. It is hardly a secret that the Valve's move into distribution with Steam is causing sleepless nights for Sierra, but one wonders whether the combination of Steam's official launch and the September 30 date touted for Half-Life 2 means we are about to see a publishing wildfire emerge as Valve goes it alone.**

**In this era of carefully orchestrated marketing activity the last thing anyone wants is for the secret to slip. Well, the US Federal Communications Commission (FCC) did just that to Microsoft when it published approval for an Xbox Wireless Adaptor on its website. The device can be used to connect to an 802.11g/b router for Xbox Live! play or to another XBox with a Wireless Adapter for System Link games. Microsoft has confirmed the product and refused to say anymore, but expect announcements at the upcoming X03 preview events around the globe.**

## BUZZWORDIKAH:

**Aspirational Marketing**

**Aspirational marketing has always been entwined with technology branding. It involves the positioning of a product into a niche and then making that niche highly desirable, blurring the needs and wants boundaries. Perhaps the best use of this technique in recent years has been Sony's original PlayStation marketing campaign.**

# No strings attached

**D-Day for Nokia's N-Gage is approaching, John Gillooly sees how the plans are progressing**

Wireless gaming. It's one of those nefarious catchphrases thrown around and seldom defined but used mainly because wireless functionality is the one common feature of the next generation of portable gaming platforms. Originating as the term used to cover games that were being developed for mobile phones, it has now expanded to include devices like Tapwave's upcoming Zodiac (formerly codenamed Helix) gaming PDA, Sony's PSP and Nokia's N-Gage.

This part of the industry is set to go crazy in late September/early October as firstly Sony lobs out more PSP info at the Tokyo games show, then Nokia launches N-Gage on 7 October and Tapwave start taking pre-orders for the first Zodiac units.

While nearly everyone in the industry sees Sony's PSP as being a sure-fire success, opinions are well and truly divided on how N-Gage will be received. This may be Nokia's first foray into the gaming realm, but the Finnish mobile phone superpower intends to be in the gaming market for the long haul, something reinforced by local N-Gage spokesman, Rick Gawdat: 'N-Gage makes a big statement. We are here to stay.'

In the lead up to a console launch, focus usually falls on the all important pricing. Console manufacturers often take a big loss on hardware which they make up through game sales. However mobile phones follow a very different sales model thanks to the bundling of phones with plans. This means that most of the phone's cost is hidden within the contracts monthly repayments, so retail prices are almost meaningless.

N-Gage has a nominal retail price that hints Nokia is probably taking a loss on the handsets, but puts it well inside the 'zero dollar plan' price range. Top-end mobile phones usually retail at a price over $1,000, but Nokia is launching N-Gage at the retail price of $600 in dark green or silver colours.

It is scheduled to launch with ten titles spearheaded by Tony Hawks Pro Skater, Tomb Raider and Pandemonium. Mobile phone retailers will stock N-Gage and a handful of premium games, while traditional game retailers like Electronics Boutique will stock wider ranges of games as well as handsets. Nokia will not be bundling any games with N-Gage, rather they are leaving that decision up to the mobile carriers and retailers.

**ABOVE: Tony Hawk's Pro Skater is leading the move of franchises from consoles and PCs to the wireless gaming realm.**

To complement the launch Nokia also recently announced the acquisition of Sega's online arm, which will facilitate the global community that Nokia aims to build with N-Gage. This centres around a global portal designed to provide new game content like levels, cheats and strategy guides for download via GPRS. To get people using this portal there will be no charge for downloadable content until July 2004 and Nokia said it is committed to improving the end user experience through feedback.

The other main part of the wireless gaming revolution that people keep harping on about are the games themselves. No matter what anyone says, games sell consoles, just look at the number who bought a PlayStation 2 for Final Fantasy X, Gran Turismo 3 or GTA 3. Traditional games publishers have varying degrees of interest in wireless gaming but there are a few companies who have leapt onboard the wireless bandwagon early and in force.

One such company is Activision, who was the first traditional games publisher to become involved in the wireless gaming realm, back when it teamed with Nokia to port 10 Infocom text adventures to work via WAP in 1998.

Since then it has placed increasing focus on wireless gaming and is dedicated to extending its gaming franchises into this realm. In fact both Nokia and Tapwave are pushing Tony Hawk's Pro Skater as premium titles for their platforms.

When asked about the role of wireless gaming in multi-platform franchises, Dave Anderson, Director of Business Development and Licensing for Activision said the company was committed to raising the profile of wireless titles to the same level as their console based siblings, on one big proviso, 'the big thing is whether a game fits the platform'.

He said that if a game fitted the platform then Activision were committed to pushing the wireless version just as hard as the console one, and what's more would aim for a simultaneous launch.

When asked about the potential of products like N-Gage and Tapwave, Anderson said, 'There is a market for mobile gaming, Nintendo proved that.

But it is the older demographic after a high-end technical device with mobility, that is what N-Gage and Zodiac are targeting. But they need to ensure proper features to make the mass consumer want it. I do think there is a market for these devices.'

**ABOVE:** Rebellion's Judge Dredd: Dredd vs Death game uses the custom Azure engine, which features a 'Graphics Novel Renderer' that helps to create a look midway between realism and Cel shading.

According to Anderson, no one really knows just how big that market is, but companies like Nokia and Activision are well positioned to find out. JG

## DEVELOPER QUOTE OF THE MONTH:

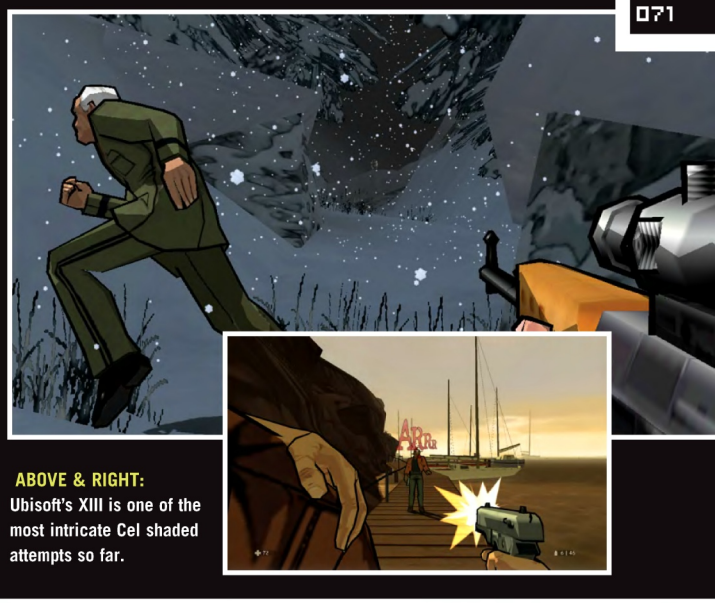
**'We've been building it for five years. I think when we started we were using two rocks and a stick, and then we graduated to an abacus.'**

**Gabe Newell from Valve software, when asked about the systems Half-Life 2 was created on over it's long development.**

## CEL CULTURE

**When Sega released Jet Set Radio for the Dreamcast it ushered in a new era of gaming graphics. Jet Set Radio (JSR) was the first major title to revolve around the use of Cel shading, a means of flat shading and outlining 3D graphics in order to make them look like a cartoon. When Nintendo first unveiled its recent Legend of Zelda: The Wind Waker, more column inches were dedicated to its cutesy use of Cel shading than to the actual game itself.**

**But Cel shading is only part of a wider segment of 3D known as Non-Photorealistic Rendering (NPR), and there are several upcoming game releases that are pushing the boundaries of NPR in very different ways. Ubisoft's XIII is perhaps the most prominent of these games, and employs a traditional Cel shaded look via the Unreal Warfare engine to create a surprisingly sophisticated graphics experience.**



**ABOVE & RIGHT:** Ubisoft's XIII is one of the most intricate Cel shaded attempts so far.

**Until recently, most NPR has been undertaken by the CPU, but modern graphics hardware has lightened this load. Even though Cel shaded imagery looks simple, it is the end product of a vertex shader routine that can be quite complex. There are two basic parts to creating a Cel shaded image, the first is the actual shading of the surface and the second is the creation of outlines.**

**This usually involves lighting the scene as per normal and then running shaders that split the lit surface into two colours based upon lighting intensity. Edge detection involves a similar process, and line thickness is determined based upon the the angle at which a particular edge is viewed.**

**While Cel shading is certainly the most prominent Non-Photorealistic Rendering technique, there are many more on the way. Games like S.T.A.L.K.E.R. use post processing filters to achieve surreal image results, while the UK's Rebellion has created the Asura engine for the upcoming Judge Dredd: Dredd vs Death game, which employs a 'Graphics Novel Renderer' that leverages rim lighting for character outlines and specular lighting for surfaces, creating a look sitting somewhere between Cel shading and normal rendering that Rebellion (who also own 2000 AD) thought much more indicative of the gritty Judge Dredd comic style than a cheesy Cel shaded one.**

JG

# S.T.A.L.K.E.R.: OBLIVION LOST PART 2

**James Wang gazes vacantly at the clouds and wonders why.**

S.T.A.L.K.E.R.'s engine is more than just a graphics engine – it's an entire system which provides feedback on all levels. Graphics gets the most attention due to its visual appeal, but sound, physics and AI are the fabric which knit together various gameplay elements. Gamers' expectations have grown so high that separate engines are developed to enhance the sophistication of these elements.

This year we've seen a major paradigm leap in game physics. The most spectacular showcase of this leap is what we've seen in the Half-Life 2 gameplay demos. But this isn't a one-off wonder; the whole industry is changing the way it's doing physics. Much like the switch from fixed shaders to programmable shaders fuelled by the latest GPUs, the transition from MHz machines to GHz machines has allowed a similar paradigm change for physics. Special scenes which were once specially scripted sequences are now all possible through dynamics of soft and rigid body physics. S.T.A.L.K.E.R.'s ODE physics engine is a testament to this change.

## ODE-PHYSICS FOR FREE

ODE or Open Dynamics Engine is an open source physics engine which incorporates all of the essential tools for dynamic physics. Unlike commercial products like Havoc or Karma, ODE is free and fully customisable. When asked why the choice was made to use open source software over more fully featured commercial products, Oleg Yavorsky, Senior PR Manager at GSC Game-World cited cost and flexibility, 'It is enough to integrate ODE into the game. Open code provides full control of everything happening inside, this makes the development easier and means less work. Mathengine or Havoc is in fact costly and we can't tell for sure that we will benefit immensely. Besides, commercial engines would require integration anyway.'

Much like the advancement in graphics, physics is also about the generalisation of problem solving. The essence of it is that using the same set of laws on all game world objects will give more consistent, convincing and elegantly handled results than if special cases and effects are done separately. Unified lighting is preferred over hacking lightmaps and local shadows. Higher level AI offers more options than extensive scripting. In the field of game physics, this change is also taking place – S.T.A.L.K.E.R. (and Half-Life 2) represent the cream of the crop.

## RAG DOLLING

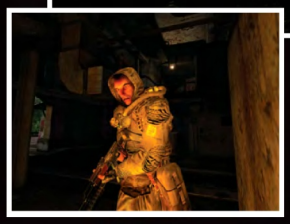
Rag doll is something we've come to expect from all first person shooters. By controlling characters' bodies under a common set of physics equations, the once laborious task of creating death animations is avoided. But, as George Broussard commented (DevQuote of the month, *Atomic 29*), rag doll quality still has a long way to go and differs greatly from game to game. S.T.A.L.K.E.R.'s rag doll development using ODE has recently taken great strides. Characters with up to 50 bones (bendable joints) can now fall from a tower, cling and bounce across surfaces and hit the ground with realistic impact.

In the olden days, typical game objects were part of the static environment – just decoration. In a bid to improve the whole dynamism of reality, more and more of these objects are now integrated into the physics environment. Throw a grenade in S.T.A.L.K.E.R. and not only will fragments blast your enemy to bits, but the shockwave will send their bodies flying sideways. Nearby crates will be blasted away by shockwave simulation, and any unfortunate rats nearby will be your meat burger for the day (don't quote me on the last part). Bullets are also modelled into the physics engine. When shot through walls, 'the bullet flight distance will reduce depending on obstacle material and, probably, wall thickness,' said Yavorsky.

## GPU FOR GAME PHYSICS?

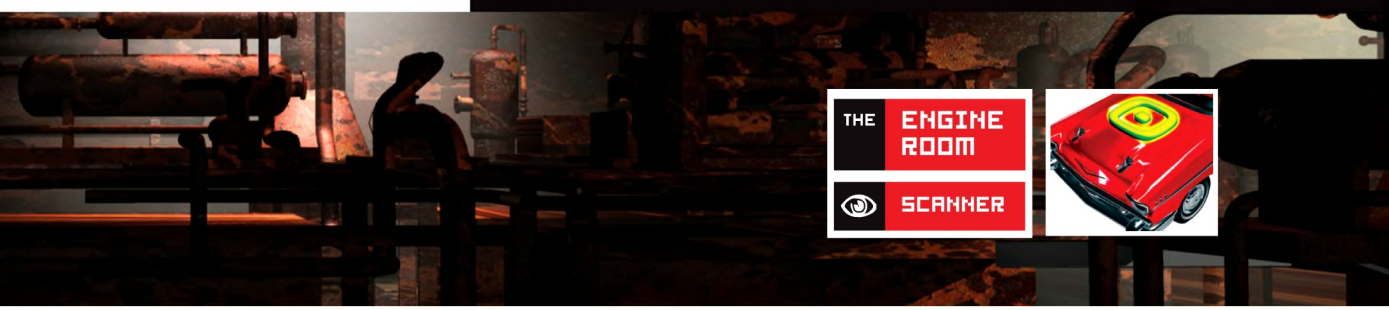
With so much talk about solving general problems on the GPU, I was excited when the team listed 'sparse matrix solvers' as one of their non-graphical features considered for GPU offloading. 'First off, it's not all that you can implement on GPU,' Yavorsky explained.

**ABOVE: S.T.A.L.K.E.R. leverages more than just graphics to create believable environments. Character animation, physics, sound and AI also come together to create a believable, interactive world.**



**ABOVE: The gorgeous sky over Chernobyl is less complicated than it looks, using high resolution textures with enhancements like flocks of digital birds to increase the visual impact of what is basically a traditional static skybox.**

'Secondly, you need to transmit data back from GPU. And, it's a known fact that the speed of transmitting data CPU-wards is very low. And, thirdly, our GPU is already loaded virtually 100%.' The prospect of using GPUs to do physics, while tantalising, is unfortunately held back by basic data path limitations. The work results of GPUs are designed to be sent directly to the RAMDAC for display, not for reprocessing in the system. Hence, working out the results of physics equations may be fast enough, but getting the results back to the processor will require returning through the crowded AGP bus – a passage that's far from desirable.



THE ENGINE ROOM

SCANNER



The S.T.A.L.K.E.R. dynamics engine would not be complete without a full weather system. Rain, fog and wind are standard, along with day-night transition to keep the scenery changing. There's also Chernobyl-environment features, such as blowouts and gravity distortions. With wildlife and NPCs roaming the world, living in The Zone never has to feel lifeless.

## STATIC BEAUTY

If you stare at the sky in S.T.A.L.K.E.R., I'll be amazed if you're not. But I was shocked to find that it's actually just a skybox. With so much talent in the tech and art we've seen so far, what's holding back a more dynamic effect? 'Firstly, implementing dynamic sky takes quite a lot of time. Secondly, computing detailed sky will take a lot of processor time. And, thirdly, in realtime it will still be impossible to get such a sky as on a photograph,' Yavorsky said. The first reason probably weighs the most. Game creation requires design compromises and, in the end, gameplay wins out over graphics glamour.

When it comes to designing good AI, it's easy to cheat – give the AI all the info on the player and let it seek and destroy. Instead, in S.T.A.L.K.E.R., the AI knows nothing more than what it can see, hear and touch – no unfair info is given – guessing algorithms allow the AI to deduce the player's location based on senses. 'Stalkers see only when they really can. They can understand by the sound that someone is shooting at them, that there is a man walking around or an animal, [and] may try to find it or change the route to avoid it,' Yavorsky explained. If a creature's vision is hindered they'll continue to probe the area using auditory and haptic senses.

## AT LAST, WAVE-TRACING!

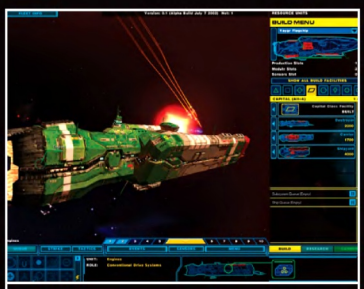
George Lucas once said sound is 50% of the movie experience. In an attempt to tap into this 50% better, S.T.A.L.K.E.R.'s sound engine will utilise a high quality HRTF (Head Related Transform Function) 3D sound engine with partial wave-tracing abilities. Wave-tracing is a method of simulating sound interactions in realtime from geometry rather than playing back 'pre-mixed' reverbs (*Atomic 31, X-Ray: Sound wares*). 'Wave-tracing has been implemented exclusively for defining sound occlusion by some obstacle,' Yavorsky explained. 'For example, some moving sound source will be heard differently from indoors and outdoors. Along with that, the transition will not give any abrupt changes. Reverb and echo will change smoothly.'

S.T.A.L.K.E.R.'s music implementation is also dynamic, based on character actions and game events. The dark and gloomy post-apocalyptic score melts into the visuals and fills in any gaps.

S.T.A.L.K.E.R. is turning a lot of heads and earning a legion of fans. Looking and feeling similar to Half-Life 2, you'll find them compared a lot. But ultimately, it resides in a different genre. Although still in alpha-stage production, S.T.A.L.K.E.R. is shaping up to compete with the heavyweights of next year. On a personal note, I have one wish for this game: please don't fall into the warping grasp of feature creep! **JW**

# Homeworld 2 <<<

**Logan Booker is now of the belief that space, while cool, is all the same.**



Destroyers are back, but they're not as powerful as they were in the original.

The much improved texture resolution and lighting do wonders for realism.

Unlike Homeworld or Cataclysm, fighters are now a worthwhile fleet addition.

No matter what the medium, when one spaceship blows up another using laser beams and/or sub-sonic temporal torpedoes, a child wearing a propeller hat and holding a model Star Destroyer smiles. We saw it in *Star Wars* and endured it in *Flash Gordon*, but Homeworld was our chance to relish it. It only takes one monster title to change a genre, and for RTS, Homeworld was that title.

While its sequel hasn't been drowning in hype, there is a large community of core gamers with the need for a fresh realtime strategy who have big expectations for Relic Entertainment's next installment. Apart from Rise of Nations, the line-up of games over the past months has been less than fresh.

The original Homeworld's narrative style continues in the sequel, with a grandfatherly voice at the start of the game telling the history of the 'hyperspace cores' – rare, ancient devices that allow ships to travel vast distances. To start, there's only one core, but as the tale progresses, two more are found and the hostile Vagyr race wants them for itself.

This is where the player steps in. You're put in command of the Pride of Hiigara, a newly built mothership. Vagyr forces launch an attack against the vessel right after it has its hyperspace core fitted. While you're lead by the hand in the first couple of missions, your influence will expand as your build and research options pan out. The mothership acts as a construction yard and science facility, where you can create your fleet and plan new designs. It's not that straightforward though.

One of the first challenges you'll face is the new interface. Unrecognisable from the original game, the most noticeable change is that it no longer entirely obscures your view. It's semi-transparent and off to one side, so it can always be open while you manipulate your view using the mouse and issue orders to your fleet. Construction and research are separate sections, and ship types are split into tabs.

Also changed from Homeworld is fleet population; instead of a universal cap, each ship type has its own limit. It's hard not to appreciate the ramped up graphics, with fine detail provided by the textures and lighting, and impressive sprites used for weapon fire.

As to actually playing Homeworld 2, you'll need to understand its main dynamics –the capital ship module system and the variety of crafts and their roles. For example, to start researching, you'll need to build a research module but you don't need to stick this on your mothership; if you have another production-capable ship, you can use that. This gives the player flexibility with their base capabilities and the customisation of combat vessels. But there's more than just modules, ships can be enhanced with extra sensors and production modules to improve their abilities to search and manufacture.

The two sides in the game have little in common regarding what ships they can make. Many crafts have similar roles, filled in varying ways, and although spoilt for choice, you will find you'll only build a select few ships to counter your enemies. The Hiigarian ion frigate, for instance, is the only frigate you'll need to fight capital ships. With an escort of fighters or flak frigates, your enemy will need destroyers (one of the most expensive ships) to fend you off. This isn't necessarily bad, but once you've stopped building willy-nilly, you'll find certain construction tabs gathering dust.

Visually, combat is immensely satisfying first time around, but it gets old quickly as nothing much has changed compared to the original. Fights feel sedate and 'distant', and the sound effects for weapons are flat. Games are also slow, as there's no cheap combat ships – the cheapest are standard fighters, and a squadron of these costs 500 resource units (RU). Considering a destroyer costs 2000 RU, it's pricy to wage war, even on a micro-scale.

Plenty of effort has gone into Homeworld 2; unfortunately, the result is not a new game but a polished Homeworld. If exploding ships is your bag, or you're looking for something fresh in RTS, you can't go wrong. Just don't expect to be gob-smacked.

SCORE: 8/10

## GAME DETAILS

**REQUIREMENTS:** Pentium III 750MHz; 256MB RAM; 32MB video card with DirectX and T&L support.
**RECOMMENDED:** 1.4GHz CPU; 512MB RAM, 64MB video card.
**DEVELOPER:** Relic Entertainment www.relic.com
**PUBLISHER:** Vivendi Universal www.vugames.com
**DISTRIBUTOR:** Vivendi Universal www.vugames.com
**PHONE:** Vivendi Universal (02) 9978 7722

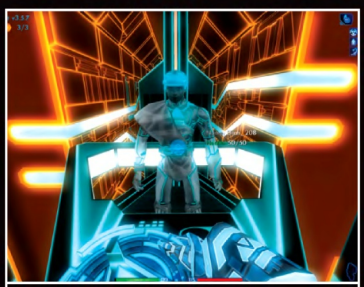
**O:** Epic space battles; flexible production system; deep tactical gameplay; wide variety of ships.
**O:** Really just a polished Homeworld; nothing new; sound effects and in-game voice acting.

LucasArts and the LucasArts logo are trademarks of Lucasfilm Ltd. © 2003 Lucasfilm Entertainment Company Ltd. or Lucasfilm Ltd & TM. All rights reserved. Developed by Activision Publishing, Inc. and Raven Software. Distributed by Activision Publishing, Inc. Activision is a registered trademark of Activision, Inc. and its affiliates. All other trademarks and trade names are the property of their respective owners.

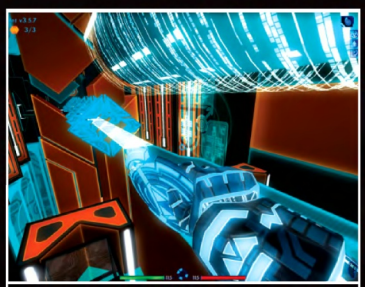
# TRON 2.0 <<<

HOT AWARD

**John Gillooly realises just how much of a Disc-head he is.**



Software takes human form and never says, 'It looks like you are writing a letter'.



Environments pulse and buzz with data flying about in a gorgeous frenzy of neon.

Grab your Disc and probe the ports of the best looking router man has ever seen.

There are two uses as far as we know for neon adorned stackhats. The first is to keep the aliens from stealing your thoughts and the second is to pay homage to the movie that started the CGI revolution, Disney's *TRON*. It's been 21 years since *TRON* first aired, and now there's a sequel, unsurprisingly named TRON 2.0.

Developed by industry stalwarts Monolith, TRON 2.0 is a blast of silicon tinted fresh air through the stale first person shooter genre. One of the freshest shooters to appear in a while, it's hyper-geeky, unconventional and completely lacks Nazis, terrorists or banana wielding mimes.

*TRON* has certainly dated. When the movie was made it was a pioneering mix of live action and CGI and contributed to the creation of one of the constants of modern cinema – CG special effects. Since then the world has spun a few times and both the tech inside computers and the tech used for special effects have leapt forward.

What better way to recreate the retro-tech world of *TRON* than to employ the finest tricks available to the modern 3D programmer? A game made primarily from monochrome, brown and neon primary colours does not initially sound like a contender for best looking game ever made, but Monolith's TRON 2.0 is certainly that. It is one of the most visually distinctive games we have seen and it is a high water mark in the intelligent use of programmable 3D hardware, without a pool of water or leafy tree in sight.

Set in modern day, you play as Jet, son of the creator of the original TRON program and ENCOM employee. A nasty corruption in your system has you digitised and sucked inside to rescue Ma3a, an AI program who is helping to find your father who was kidnapped by the rival fCon corporation.

The inside of ENCOM's network is a tripped-out techno wonderland of geometric shapes, translucent panels and glowing neon. It's populated by various pieces of software, who run around in human form and either ignore, assist, or attack you. Each character is superbly rendered and easily recognisable based on its colour. Blue, green and gold are fine, but the red ICP (Intrusion Countermeasure Protocol) guards and the bright yellow corruption viruses need to be treated with respect, and a touch of the old ultra-violence.

For the times when you want to say it with blunt trauma there are a handful of weapons available, known as primitives. The main weapon is the humble Disc, one of the stars of the original movie. The Disc can be flung at enemies or used to block enemy Discs. It seems simple at first but there is an art to Disc combat that is difficult to master. The second primitive is the Rod, which is primarily used to generate a light cycle during several races that you need to undergo, but can also be used as a laser-like weapon. The Ball primitive is the main weapon of the viruses and also a handy blob of explosive power in Jet's hands. Finally there is the Mesh primitive, which comes into play later in the game and allows you to suck energy from enemies.

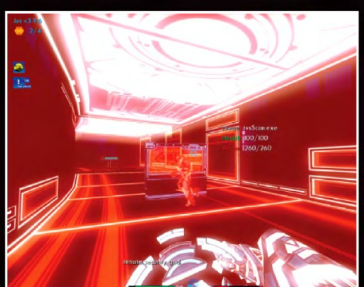
Each primitive has two additional software subroutines to be found. Subroutines form part of the character development system employed in TRON 2.0. You find them hiding in archive bins, and they can be downloaded and installed in memory to enhance abilities like jumping. One of the cool things is that they often need to be ported or cleaned by your internal software before they can be used, adding a nice little twist.

As you progress through the computers on ENCOM's network you gain experience in the form of Build points. These can be found hidden around levels and are also given when you complete tasks important to the story. As you move through the game, your software version will slowly improve and you can distribute basic statistics whenever a new version ticks over, giving a low level background hum of RPGness to the game.

Alongside the main action there is also a reprisal of the famous Light Cycles from *TRON*, which feature in parts throughout the game and as a separate single and multiplayer mini game.

TRON 2.0 is a high watermark in 3D gaming. At heart there is the tried and true fight through levels, collecting stuff, jumping a bit and solving puzzles, but Monolith has worked it in an amazing way. For an enjoyably different experience, TRON 2.0 stands unrivalled in a sea of anti-terrorist first person shooter banality.

SCORE: 9/10



## GAME DETAILS

**REQUIREMENTS:** 500MHz CPU; 32MB DX7 compliant graphics; 256MB RAM; 1.2GB HDD
**RECOMMENDED:** 1GHz CPU; 64MB DX8 compliant graphics; 256MB RAM
**DEVELOPER:** Monolith www.lith.com
**PUBLISHER:** Buena Vista Interactive www.tron2.net
**DISTRIBUTOR:** Electronic Arts www.electronic-arts.com.au
**PHONE:** Electronic Arts (02) 9264 8999

**O:** Graphically superb, involving storyline, different twist on the shooter and movie sequel concepts.
**O:** Light cycle games slightly underwhelming and fiddly.

# CHROME

## COUNTER STRIKE AND DEUS EX MIXED IN ONE JAW-DROPPING GAME!

Chrome is set at the turn of the 22nd century during the colonisation of Valkyria, a solar system on the edge of the universe. You are Bolt Logan, a former member of the Elite Special Units, a man with a reputation for being the best.

Now he's an anonymous mercenary trying to break free from his past and hoping for lucrative contracts on Valkyria. While on what seemed to be a routine mission, the main characters get mixed up in a world full of twists and intrigue, that includes pirates, colonists, giant corporations and some of Logan's old friends.

- Combines tactical gameplay and a dynamic action-packed plot with a wide range of spectacular weapons, futuristic vehicles and high tech devices.
- 16 challenging missions set in huge outdoor locations and inside futuristic facilities.
- Unique gameplay based on player's freedom of choice, wide open environments and cyber technology that improves character's abilities.
- Innovative multiplayer mixes indoor and outdoor fighting, vehicle combat and the use of implants.

TAKE2interactive

techland

WWW.CHROMETHEGAME.COM

MA15+
MEDIUM LEVEL ANIMATED VIOLENCE

PC CD ROM

# Live for Speed 2 <<<

**George Soropos thinks Live for Speed 2's S1 release promises good things to come.**

In LFS2, yellow cars are faster than red ones. Deal with it.

There's a lot of detail, so you might be confused at first. Cars!

Make custom skins. It's fun. Mind you, if all you do are silver ones, you need help.

In an industry that is increasing in size every year, and with budgets that would make an Australian film producer green with envy, it's almost impossible to believe that three guys could put together a PC title good enough to compete with the likes of EA and Atari. Scawen Roberts, Eric Bailey and Victor van Vlaardingen began work on Live For Speed roughly three years ago after Roberts and Bailey had left the team at Lionhead Studios. A test demo of the game has been around for a long time now and many of you may have already had a bash using the three cars and single track available in that version.

The new 'S1' release is the first commercially available part of what will eventually be a four part release for LFS and offers quite a lot for around $25. S1 can only be purchased online from the developer's Website, so you will need a credit or debit card to get your hands on it. For that modest outlay you will receive four more cars and three new track areas with multiple configurations, 28 in all. As in the demo, the extra cars have to be 'unlocked' with race points gained from finishing in a podium position in either the single player or online games.

On the surface LFS is a fine looking piece of work with the car models sharp and spunky, although modelled on some dinky Japanese sports car types. The trackside details are fantastic, when you have time to notice them, and the game interface is straightforward with adjustments taking little time away from racing when you're in the 'pits' The controller setup page is a little confusing at first, but only because it has such a plethora of detail. Which brings us to one critical point, in order to help keyboard players the game gives them a little help with steering, and at the time of writing a well practiced keyboard player can beat a player with a stick or wheel of the same skill level because of this. However by the time this magazine hits the newsstands this quirk should have been fixed with a suitable patch. The developers are also yet to implement visible car damage, although your car's performance will be affected by accidents if the server is set for it.

Under the bonnet, so to speak, LFS features some impressive physics modelling with details such as tyre flexing and your car's weight distribution adding to the driving experience. There is a detailed car setup system in the 'pits' and the ability to send car setups to each other from within the game so that all players have the same setup, or just to swap and compare. The different cars offer front wheel drive, rear wheel drive and four wheel drive action and handle appropriately most of the time. There is a small problem with the low speed handling of some of the cars with their rear ends fishtailing a bit too easily at low speeds, but again with all the player input this is bound to be touched up in an upcoming patch.

The single player AI featured in LFS is certainly not the best you've ever seen in a game, but acceptable while you're building up points to unlock new cars. AI drivers don't mind smacking your arse around so watch out! However the main focus of LFS is online play and for that it is superbly suited. Whether you're playing with a cable connection or a humble 56Kb, LFS runs smoothly, requiring only very small packet transfers between PC and server.

Live For Speed also features the easiest custom skin creation system we've ever seen in a racer. Just grab a template skin from the game directory, plaster some graphics on it (doesn't matter if you go over the lines or outside the template) and the game does the rest. Unfortunately at the moment the only way other racers can see your skins is if you email them around. Hopefully the S2 release will see that situation remedied. If you start your own league you can always get players to upload their skins to a directory on your server.

There are a few independently developed racers in the works at the moment: 'Racer': www.racer.nl, 'NetKar': ww.drivingitalia. net/netkar and 'Racing Legends': www.west-racing.com/racing.htm. However Live For Speed is the first one to market with its 'S1' release and already building quite a following locally and overseas. Open wheelers, karts and off road vehicles are planned for future releases. With so much user input, the game can only get better.

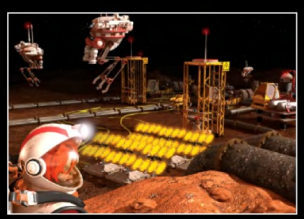
SCORE: 8.5/10

## GAME DETAILS

**REQUIREMENTS:** Pentium III 600 MHz; 128MB RAM; 16MB graphics
**RECOMMENDED:** Pentium III 1GHz+, 512MB RAM, 64MB graphics
**DEVELOPER:** Scawen Roberts, Eric Bailey and Victor van Vlaardingen
http://lfs.racesimcentral.com
**PUBLISHER:** http://lfs.racesimcentral.com
**DISTRIBUTOR:** http://lfs.racesimcentral.com
**PHONE:** n/a

**O:** Good graphics and physics engines evolving, works well online, large player community, developers committed to players and their suggestions.
**O:** Small glitches in car handling, no skin exchange or visible body damage in game yet, keyboard player advantage at present.

# 70 SEXTILLION STARS.
# 10,000 IDENTIFIED GALAXIES.
# AND YOU GET THIS ASSIGNMENT!



A planet to be built...

...with 20 misfits colonising...

...and aliens to attack.

## WELCOME TO LIFE BEYOND THE STARS.

PC CD

FIREFLY STUDIOS™

© 2003 Firefly Studios Ltd. Space Colony, Firefly Studios and the Firefly Studios logo are trademarks of Firefly Studios. Gathering, the Gathering logo, Take Two Interactive Software and the Take Two logo are all trademarks of Take Two Interactive Software. All other trademarks are properties of their respective owners. Developed by Firefly Studios. Published by Gathering. All rights reserved.

www.spacecolonygame.com

GATHERING

# Lionheart: Legacy of the Crusader <<<

**John Gillooly sits in the comfy chair and spends some time with the Spanish Inquisition.**

800 x 600 resolution and stupidly large inventory icons. . . the horror. . .

Despite the low res, Reflexive has done great work with the look of the game.

Another map, another hack and slashathon through Mongol Goblin hordes.

New concepts in computer RPGs are few and far between. Usually they involve saving mythical lands from hordes of deranged elves, never-ending trolls and seas of goblins. There are many fun games, but the vast majority end up feeling like a car crash between Middle Earth and D&D. Thank god for Black Isle Studios and its fetish for bringing different concepts to RPGs.

The company responsible for games like Fallout and Planescape, which stand as some of the most refreshing departures from the tried and true RPG themes, continue the tradition in Lionheart: Legacy of the Crusader, developed by Reflexive Entertainment under the watchful eye of Black Isle.

The story goes something like this: During the Crusades Richard the Lionheart was tricked into performing a ritual causing an event called the disjunction, during which magic escaped into the world, altering the course of earth's history. Richard teamed with his Turk enemy Saladin to seal the rift. But of course the damage was already done. Set in the area around Barcelona during the Late Middle Ages, you are cast as the scion of Lionheart, a descendant of King Richard.

Barcelona is populated with several major factions and famous names of history. Over the course of the game you will encounter such luminaries as Machiavelli, Cervantes and Leonardo Da Vinci. Besides predictable factions like the Knights Templar, or the wizards or thieves there is also one that nobody ever expects, the Spanish Inquisition.

Lionheart is based around the SPECIAL system of character development created for the Fallout series. This system controls how your character is created and how it develops as you progress through the game. It is an essentially classless system, which endows a lot of freedom to develop characters along different paths.

Besides an array of statistics which determine your basic skills, the SPECIAL system allows for two important modifiers – traits and perks. Traits are inherent, chosen at the time of character creation and modify you in several ways. The quirky traits from Fallout like Bloody Mess are gone, but there is a huge range that helps tailor your character to your style. Perks are similar but are given every three levels and act in a similar way to traits.

Unlike Fallout, combat in Lionheart is realtime, which is a generally clunky and unsatisfying experience, made worse by the restrictive 800 x 600 screen res (the way it's meant to be played, my arse, NVIDIA). Combat works, but lacks the elegance and simplicity seen in other RPGs. You can recruit NPCs into your party but they are generally useless and more combat time is spent healing your companion than actually fighting. It wouldn't get so annoying if it wasn't for the fact that this is a combat heavy game – no matter how silver tongued and light footed you are, at some point you are going to get worked and need to fight back. This is less of a problem when playing the game's multiplayer, but involves a straight replaying of the single player storyline and while fun, is hardly anything special.

Lionheart is so incredibly refreshing you find yourself forgiving faults like this but there are just too many 'almost' aspects to it. Combat is clunky, inventory management is nightmarish thanks to huge item icons that seem tailored to the myopic, dungeons usually have lots of monsters and bugger all else to make them interesting, and after a while the constant wading through pissed off bad guys gets annoying.

Reflexive and Black Isle have made a good game with Lionheart, but they've fallen short of the greatness that games like Fallout and Planescape so rightly deserve. Lionheart has such a cool premise and strong story that it does suck you in and destroy your spare time for a while, but the problems just keep grating. However, it is a fun enough experience to tide us over until Black Isle finally announces Fallout 3.

SCORE: 7.5/10

## GAME DETAILS

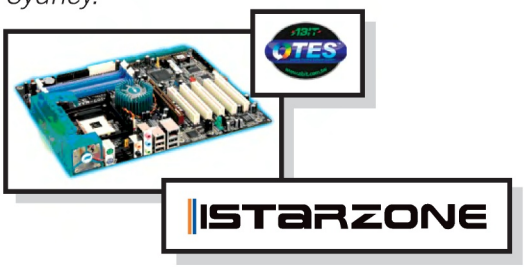
**REQUIREMENTS:** 700MHz CPU; 128MB RAM; 8MB graphics card
**RECOMMENDED:** 1GHz CPU; 512MB RAM; 64MB graphics card
**DEVELOPER:** Reflexive Entertainment www.reflexive.com
**PUBLISHER:** Black Isle Studios www.blackisle.com
**DISTRIBUTOR:** Vivendi Universal Games www.vugames.com
**PHONE:** Vivendi Universal Games (02) 9978 7722

**O:** Unique storyline, strong character development.
**O:** Restricted visibility thanks to 800 x 600 resolution, hack and slash focus.

# Come play with us at TequiLAN Sunrise!

*It's the early summer's exclusive game party and hardware launch - and only* **50** *lucky Atomicans will win tickets!*

***Play hard and party harder** with your fellow gamers, **Atomic,** THQ and ABIT at this exclusive party, to be held on 9th October at IStarZone in Sydney.*




*For a chance to get cosy at Australia's coolest gaming venue, visit :*

**http://atomic.ajb.com.au/tequilan.asp**

**Entries close 30th October so be quick.**

*Be among the first to play THQ's Warhammer 40,000: Fire Warrior.*
*See, touch and covet ABIT's coolest Max III mobos and OTES graphics cards (if you're lucky you might even walk away with them).*

## TequiLAN Sunrise - Where fun and games mix.

Get informed **Get Atomic**

atomic
MAXIMUM POWER COMPUTING
www.atomicmpc.com.au

# Star Wars: Knights of the Old Republic

HOT AWARD

**We only just managed to pry Nathan Davis from his Xbox to write this review.**

That's the last time I'll let a Twi'lek steal centre stage...

The beast's jaw dropped at the sight of a chick with a sabre.

Meet my flying schwartz, feeble droid, ya fuzzball laserbrain.

I'm a sucker when it comes to the *Star Wars* saga, being an avid fan ever since I can remember. Hence, it kills me to say I've been unimpressed with the output of *SW* related games from LucasArts – they've just been mediocre – until now. The new Xbox RPG Knights of the Old Republic (KotOR) smashes this history and is finally a beautiful merging of a *Star Wars* storyline, game play and graphics – the compelling feeling that comes over you is that you're being spoilt.

You choose the appearance and configure your primary character's abilities. Tweaker's ecstasy, because for those who spend hours/days calculating a perfect match of abilities, you can do just that; configure your character's attributes and skills. Thankfully there's a quick pick option, allowing for the non-tweakers.

Once you've decided on how few points you can get away with assigning to intelligence, you are planted in the middle of the action. You find yourself awakening on a large ship, the Endar Spiro which is mid-space and under serious fire from the galactic dominative wannabes, the Sith. You need to escape, and this is where you learn most of the controls. Fleeing from the ship in an *escape* pod you land on the nearby planet Tarus (which has just been taken over by the Sith), and begin a thrilling ride of galactic proportions. The story itself starts a little slow, particularly on Tarus, but once the ball's rolling there's a well worked out storyline to be enjoyed, having you journey across the far depths of the universe.

You're not in control of merely one character. On your journeys, depending on how you speak with people, a few folk will tag along and become party members, aiding you in battles and providing you with their specialities. However, only a maximum of two party members can be with you at any one time. All these members can be fully tweaked, but you can only communicate via your head character.

Visually impeccable, with beautiful surroundings and a great atmosphere to boot. One thing that might be improved on is fluid character animation, as sometimes an NPC or one of your own party members may suddenly appear on the other side of you if they're in the way.

This game has a unique fighting system. When you come across an enemy, the game automatically pauses and lets you direct who fights, and how. You can also pause it whenever you wish to –a welcome feature, particularly mid-battle with eight or so sewer dwelling Rakghoul mutants looking at you like you're dinner.

Also, you can't attack whatever you like. Attacks are only if you've pissed someone off, your in-game character feels likewise, or you are being payed to fight (a clever in-game/puzzle).

To find your way around the game, you need to pay attention to what people are saying (thankfully logged in your 'journal'), as there is no navigation system, just a simple map to 'guide' you through, with a mini version stuck up in the right hand corner of your screen.

KotOR also uses Xbox Live, but unfortunately not for multiplayer – just game updates.

Some things, even when explained, are a tad obscure, but you figure these out as you go along. Thankfully there's a full save game option. This is an absolute godsend for a game of such proportions, considering most people don't have time to complete massive chapters at once.

There is an amazing wad of items you can collect. In fact, the ability to acquire so many things is a tad annoying, because there is no limit. Tending to get messy – what's really annoying is the fact that you can't drop or sell them. If added, this would create a wonderful equipment/credit management system (hint, hint).

Overall, this is one giant galaxy of an awesome game that should simply be sitting in every Xbox owner's cupboard, certainly not limited to *Star Wars* fans. Xbox owners have been begging for this – a decent game, and here it is. Did I mention incredible?

A top RPG ready for a massive dollop of gaming goodness. This is one of most, if not the now unsurpassed, Xbox games currently available. KotOR is the finest thing since sabre-sliced bread. Now, if you'll excuse me, I'll return to whipping out some can-o'-arse whoopage on the Sith and other evil uglies.

SCORE: 9.5/10

## GAME DETAILS

**DEVELOPER:** Bioware www.bioware.com
**PUBLISHER:** LucasArts www.lucasarts.com
**DISTRIBUTOR:** Electronic Arts www.eagames.com.au
**PHONE:** Electronic Arts (02) 9264 8999

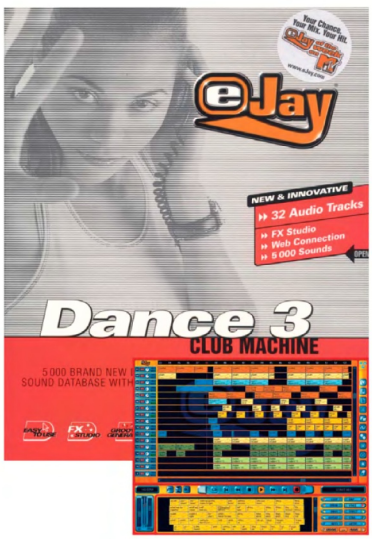
**O:** A great *Star Wars* storyline; oodles of objectives; gorgeous graphics; remarkable audio; great fighting system; near-perfect camera angles; Twi'leks.
**O:** Occasional misdirection; jittery frames; never enough Twi'leks.

# Gaming re-invented...

# ATOMICANS ONLY:

RED ANT ENTERPRISES

**Be one of the first 50** *Atomicans* to purchase a **Manta***Ray*® this month and receive a copy of Dance 3 Ejay and MP3 Station Plus absolutely ***FREE!***



## Manta*Ray*® $1,799

Robust & portable, big-image gaming with independent TV reception and replacement lamps at RRP $99

1. Visit www.mantaray.net.au
2. Go to the 'I Want One' page
3. Click on 'Buy MantaRay'
4. Complete your details - BUY ONLINE & SAVE

**Manta***Ray*® - designed for you and your mates - not your boss and his boardroom

www.mantaray.net.au

Manta*Ray*® by digislide

io@atomicmpc.com.au

# The fan

**Perhaps, due to microscopic energy flies or evil men with electron-strippers, computers stop working for one reason or another. We combat them with Dan Rutter, who comes equipped with a Logitech MX700 mouse. A mouse you could win, if you get IOOTM.**

## IOOTM:

### Ni-Cads of doom

**I've been wondering about the reliability and safety of using rechargeable batteries instead of regular alkaline varieties. Over the years I've come across products that state on the back 'do not use rechargeable batteries'. Some of those happily worked for years using *only* rechargeables, some would fry the moment you switched them on with rechargeables in them (such as a lot of older pocket TVs). Some products say to use only NiCad and not NiMH, or vice versa.**

**It certainly seems like a lot of recommendations are made by companies that have their own branded alkaline batteries (Sony, Panasonic, etc), so it's very likely they would prefer you to buy regular batteries (their own brand, preferably).**

**Is there was a way to know for certain that it is safe to use a particular battery type?**

**Steve Bolton**

**ABOVE: Lithium, alkaline, NiMH – decisions, decisions.**

The usual reason for sudden gadget death caused by rechargeables is that the device expects batteries with fairly high internal resistance. It's using that resistance as part of (or all of) its power supply, current limiting.

Non-rechargeable batteries (carbon zinc, alkaline, and the not-very-popular rechargeable alkaline) have their own resistance to the flow of current, which is generally a bit less than half an ohm for an alkaline AA cell ('cell' is the technically correct term for one electrochemical unit; 'batteries' are technically two or more cells put together). This means that even if you short-circuit an alkaline AA, only a few amps of current will flow – and that'll fall rapidly, as the poor cell heats up, its internal resistance rises, and its terminal voltage plummets.

Nickel Cadmium (NiCd) and Nickel Metal Hydride (NiMH) rechargeable cells have internal resistance too, but it's much lower; well under 0.1 ohms, even for AAs. You wouldn't think this'd be too much of a problem, since the terminal voltage for these chemistries is only 1.2 volts per cell, versus 1.5 volts per cell for non-rechargeables. Less voltage, less current. But problems can still arise with gadgets that draw a lot of current, and with rechargeables that are freshly charged.

Freshly charged cells will have a terminal voltage well above their nominal potential; fast-charged NiMH can easily manage 1.4 volts per cell. If a device expects less than that (because it draws a lot of current and thus causes fresh alkaline cells to sag to, say, 1.3 volts), the combination of high terminal voltage and low internal resistance can allow much more current to flow than is meant to. Result: fried gadget.

The same thing can happen if you use lithium AA cells in some devices. Lithiums have a 1.7 volt per cell nominal potential, and don't sag as much under load as alkalines.

You can almost always avoid the death-by-NiMH problem by simply letting your rechargeables stand overnight after charging them, so their terminal voltage settles down. Some devices still need the internal resistance of non-rechargeables though.

NiCd has lower internal resistance than NiMH, but 'peaks' lower after charging as well, all things being equal. So it's possible that some gadgets may actually prefer one technology over the other. This is pretty darn abstruse, though; generally, if it works with one, it will work with the other.

## WIRE HUNTER

A few months ago, *Atomic* ran a series of articles demonstrating a top-to-bottom 'case mod' job, including the installation of a 'wiring pole' to conceal all those messy black, yellow and red wires.

I'm keen to build a similar custom wiring harness for my PC to maximise neatness.

Gathering parts for this job has been easy up to a point; Jaycar can supply the needed plugs and sockets as well as the crimping tool and die set. Wire, on the other hand, is being difficult to find! All I'm looking for is a supply of wire to match the colour and characteristics (conductor gauge and insulation thickness) of the wire used to make the leads attached to your average PC power supply. In my search, I've tried electronics stores, hardware stores, electrical wholesalers and car accessory outlets – no luck!

Short of ordering from wire manufacturers in the USA, I thought I'd write and ask to see if you knew of any Australian suppliers of the type of wire I'm after.

**Rob Amos**

ABOVE: A lot of wire helpfully has its AWG number printed on it.

You won't necessarily be able to match it *precisely*, but since it's all likely to be cheap 16AWG (American Wire Gauge) and 18AWG PVC-insulated stuff, it's not very hard to duplicate. Medium to heavy duty hook-up wire, with the same cross-sectional area of copper or a bit more, will do the trick. If you want to be able to route the wire around tight corners, look into more expensive silicone-insulated wire, which is commonly available for thrillingly high prices from hobby shops (R/C modellers use it because of its flexibility and heatproof insulation). Most electronics stores don't stock 'silicone wire', but better automotive suppliers might.

The silicone insulated wire will probably have a lot more strands, and they'll be a lot finer; the total amount of copper in there will be the same as you'd get from cheap wire of the same gauge, but the finer strands make the wire more flexible and less likely to fracture.

If you don't care about this, though, then just buy cheap PVC insulated hook-up wire a little thicker than what's coming out of the PSU already, and you'll be fine. Hook-up wire comes in plenty of colours, so there's a good chance you'll be able to match the colour of every wire from the PSU.

## SURROUND PHONES?

I'm planning to upgrade my PC speakers, and I'm thinking of buying a good set of headphones instead. I've read that headphones are better than speakers for 3D positional sound. Headphones seem to be better in terms of telling whether the sound is from the left or right, but what about telling the front-back location of the sound? Are headphones equal to or better than 4.1 or 5.1 speakers in this regard?

My type of games are of the first-person 'sneak-shooter' type like Thief, and positional sound is very important for me. What do you suggest?

**Michael Hinojales**

Headphones are better for all aspects of 3D audio, provided they're being fed by a sufficiently clever positional audio algorithm, and it in turn isn't being fed dumb data by the game you're playing.

On the face of it, this seems silly. Obviously, speakers behind you should be the best at making you think there's a noise behind you, because, you know, there *is*.

But you only have two ears, on the sides of your head. You don't have any extra fore-and-aft sensors. Your ears figure out where a sound source is by using the oddities of the reflections and occlusions from the pinnae (the external cartilaginous ear parts whose other primary function is to give kidnappers something to cut off and mail to show they're serious), and positional audio systems use Head Related Transfer Functions (HRTFs) to fake the effects that the pinnae have on sounds from different places, so that a transducer firing straight into the ear from the side can make itself sound as if it's somewhere else.

Stereo surround speakers can do the same job with less processing, but they won't necessarily, and they're also likely to have pretty lousy drivers in them (if they're the usual kind of PC satellite speakers). All speaker systems also have channel separation problems; extra processing has to be done to minimise the amount of left-ear signal the right ear hears, and vice versa. Headphones have very little crosstalk between channels, so it's much easier for the HRTF-twiddled audio to be delivered only to the ear to which it's meant to go.

So I think you'll prefer headphones. Make sure, however, that you get *comfortable* headphones, since you're likely to be wearing them for a long time. Go to a hi-fi store that'll let you try on various different 'phones, and do so.

I, and a lot of other people, like around-the-ear 'phones, with big oval pads that sit around the pinna, not on it. I'm using a set of Sennheiser HD 590s, for this reason; they're medium-expensive 'phones, but they're still cheap compared with a good surround speaker system.

## UPGRADE QUANDARY

I recently suffered a motherboard meltdown. The board was a Gigabyte GA-7VRXP Rev 2.0, and was still under warranty. The supplier that I bought it from doesn't stock them any more, and I've been looking for an alternative if they can't get another one.

I've been looking at the Gigabyte GA-7N400 Pro (I'd prefer an MSI board,

ABOVE: Headphones are better for all aspects of 3D audio, but get comfortable ones, as you're likely to be wearing them for a long time!

io@atomicmpc.com.au

but the supplier doesn't stock them). But I have two reservations about it.

The Gigabyte site states that the board will only accept 1.5V AGP cards. I have a MSI GeForce4 Ti4400, but try as I might I have been unable to find what voltage the card uses. I checked the manual for the GA-7N400 board, and the image on the first page of the 1.5V and 3.3V notches on the card match up with the notches on my card, but I'm not entirely sure if it will work.

The second problem isn't nearly as bad. The GA-7N400 uses Dual Channel DDR RAM, and I have only one DIMM. I'm pretty sure that it will work fine, but I'd like another opinion. The last thing I want to do is put my PC back together again and find that I need to buy another 512MB RAM.

Lastly, I will need to re-apply some thermal paste to the heatsink. I'm going to use Arctic Silver III. My heatsink has one of those thermal pads, and has been in use for about six months, running almost 24/7. The Arctic Silver Website says that these pads should be removed before being used, as when the heatsink is used, the pad will melt into the microscopic grooves. Should I purchase a new heatsink and scrape off the pad, or can I use my current heatsink after cleaning the CPU and heatsink with Zippo fluid, and expect the Arctic Silver III to do its job well, but without optimum results due to the bits of thermal pad I just can't get out?

**Jason Moore**

**O** Your GeForce4 uses 1.5V signalling (its power supply is 3.3 volts, but its logic interface is 1.5). Everything capable of AGP 4x or better is a 1.5V card. So that's not a problem.

The GA-7N400 will also work fine with just one memory module – just not in dual channel mode. nForce 2 boards allow dual channel mode if you've got two memory modules, and also if you've got three or four, provided you follow the mildly obscure rules for single and dual banked three and four module layouts that are described in the manual.

Running in single channel mode creates a measurable performance hit, but not one that you should lose sleep over; it'll be no slower than your old board was.

'Chewing gum' thermal compound is, as you say, single-use only.

(Although, in a pinch, you generally can re-use it; you just don't get a very good thermal contact between the heatsink and the processor. It'll probably do, at stock CPU speed and with the side off the case, for a day or so until you can buy yourself some more goop.)

After cleaning with the nasty solvent of your choice (or just dishwashing detergent and some elbow grease), your old heatsink will be as good as a new one. Thermal goop manufacturers like to bang on about microscopic intergranular penetration, blah blah, but in the relatively high-tolerance world of the spring-attached CPU heatsink, a mild gloss of old goop molecules makes no real difference.

## RIVETING!

**I** I plan to build a new system for myself as a Christmas/Graduation present, and it's going to be water cooled. The exact details of the system, save one, are fairly unimportant.That detail is my desire to use a radiator that will take at least one 120mm fan, such as one of the Black Ice Xtreme line.

And, of course, as befitting a water cooled top-of-the-line PC system with cold-cathodes, disco balls, little statues, flaming exhaust pipes, etc, I'd like to put the innards into something more than a little beige monstrosity.

While looking at Lian Li cases, I was impressed by everything save the top panel. It seemed welded on. . . and to mount a radiator with multiple 120mm fans, I'd need to do some Dremelling. Right now I've got my system's guts in a Koolance PC-2C and rather like that arrangement.

Is it a feasible to detach the top panel from a Lian Li case, or the Cooler Master equivalent? I don't want to be popping out rivets if at all possible, as my skill with the Dremel leaves much to be desired.

If I were to give up my shiny aluminium dreams and settle for one of those acrylic cases, how hard is *that* stuff to machine with common tools (drill, circular saw, jigsaw, hammer, plethoras of curse words, etc)?

**Piloter Kincaid**

**O** The non-removable Lian Li panels aren't welded – they all just use pop rivets, as far as I know. Pop rivets are easier to remove than you think; they're only aluminium, and you get rid of them by drilling into the head until it comes loose (turning into a little collar spinning around on your drill), then knocking the stem through the hole with a punch.

(If you left your lovely set of fractional pin punches in your other pants, you can just use a nail.)

With the rivets gone, you can remove the panel and do whatever you want to it, then replace it and pop in new rivets. Pop rivet setters aren't very expensive, and the rivets are dirt cheap. Or you can bolt the panel in place, whatever you prefer.

You needn't be particularly afraid of Dremelling Lian Li panels, either. Aluminium is very easy to work, when all you're doing is cutting and drilling. It's reasonably forgiving, too, though its softness means you can easily make a big ugly mark, crease or tear if something gets away from you.

Steel cases will wear out more Dremel bits and cutting discs and sanding drums, but they're less wreckable and also cost less in the first place, so you can buy a pair of cases and have a whole separate set of panels, and probably a spare PSU too.

It's not too hard to work acrylic, either, but small mistakes can cause indelible damage. Apart from scratching the stuff, you can also split it. You also need to be careful with your power tools and keep the speed down, lest you create big melted blobs of plastic.

**?** If you never get thirsty, you probably don't drink enough water. Your body shuts down your thirst mechanism when you're dehydrated. Eight cups a day.

ABOVE: **Pop rivets are easier to remove than you think. Drill into the head until it comes loose then knock the stem through the hole.**

**Brought to you by the number 3.141592654 and the letter ß. . . and Simon Peppercorn.**

*#atomicmpc IRC regular, Ycros, sent us this little piece of tweaking goodness.*

**TWEAK:** 'Ever wish you could simply move your mouse to your other computer like with dual head, instead of the tedious task of switching keyboards, or the boring old method of buying a hardware input switch? Two nice little open source utilities allow you to do just that.

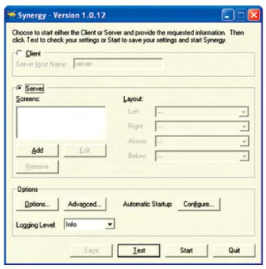
Synergy allows you to move your mouse pointer off the edge of your screen, and onto another PC over your network! This also transfers keyboard control, and the clipboard contents.'

**REPLY:** 'Surely not!' we cried. So off ran we to check it out.

Synergy, is an open source piece of software you can download from http://synergy2.sourceforge.net/.

Fully expanded it is only a total 1.35 MB in size.

When installing, you must nominate which PC will act as the Synergy 'server' and which others will be allocated as clients. Within the application, you also need to specify the position of each monitor relative to the server and the one(s) adjoining it: above, below, left and right.




This is important so the cursor knows where to go when it rolls of the edge of your screen.

You can also format Synergy to synchronise your screen savers.

To test this tweak, we set up three systems, running XP Pro, Windows 2003 Server and Mandrake 9.1. For good measure, we pulled out an old laptop running Windows 98.

Apart from an issue with dependencies on the Linux box, which was quickly resolved, we had Synergy doin' its thang in no time, leaving us feeling a little like Stanley in Swordfish. Not only does the mouse scroll across all monitors, as well as transferring keyboard controls, Synergy allows you to cut and paste text between computers! Unless the network already has its hands full chucking packets around, there is no real noticeable lag between systems.

The interface is a little confusing, but there is sufficient documentation on the website, which helps you understand how to set this up.

Synergy is undergoing constant development and you can see what improvements are planned, such as the capacity to cut and paste other file formats. There are some known bugs, and are all documented, but none which really seemed to interfere with general usage.

**RATING: 7/10**

*'Neophyte' was mightily generous, and shared this tweak with us.*

**TWEAK:** 'Hate re-activating Windows XP? Have no fear! Redemption is. . . err, near.

Simply activate your computer, and then head on over to the System32 directory in the Windows folder of your primary drive (e.g. c:\windows\system32) and copy the file wpa.dbl to a secure location.

Then, if you happen to need to re-install the OS again on the same hardware (and using the same CD key as you previously used to install the OS, and not having changed too much hardware), you can quickly re-activate your machine by copying the wpa.dbl file back into the system32 directory (overwriting the existing file of course). This will immediately kill... err, activate Windows XP.'

**REPLY:** Now before the anti piracy brigade do their little dance, this is does not actually allow illegal installations and activations of XP. It will only allow a system which has already been properly activated to be restored to its activated state, in the event of a reinstall of your operating system. You could, of course, not be a lazy arse, and ring Microsoft and punch the 25 numbers into the phone then read them out to the operator, then copy another 25 digit number that he/she gives you after explaining why you need to reactivate, then read that 25 digit number back to him/her as you enter it in. . . *takes breath*. Or just use this tweak.

**RATING: 6/10**

**TWEAK:** Windows 2003 Server has a small bug (gasps in mock horror). When a submenu is called, such as when you right click on an object and expand the 'send to' item, Windows can appear to stall.

It's momentary but annoying and doesn't need to happen. This can be fixed in the registry (can't everything?) by adjusting the value for HKEY_CURRENT_USER\Control Panel\Desktop MenuShowDelay from 0 to a value of 8.

As per usual expect the obligatory reboot for the change to take effect.

SP

# Metal Mickey – anodising made easy

**Throw the paint brushes away, Ron Prouse reckons the real way to colour your case involves lots and lots of noxious chemicals.**

**A nodise = anodize** *v.t.*, **-dised -dising**. To coat a metal, especially magnesium or aluminium, with a protective film by chemical or electrolytic means. – The Macquarie Concise Dictionary.

The subject of this Modjitsu tutorial started one Friday night when I called a friend, Scott, to ask him a couple of questions about another matter. 'What are you up to at the moment?' I asked innocently. The answer had me reaching for my car keys, 'I'm just gold anodising some stuff out in the shed . . .'

Anodising? At home? I have to get in on *this* action!

The truth is that DIY anodising is surprisingly easy.

Sure, there is the matter of highly toxic chemicals such as sulphuric acid, and the real possibility of experiencing a hydrogen gas explosion, but the process itself is easily within the realm of most computer modders.

## REQUIREMENTS

- **A plastic container – $5 Big W;**
- **Sulphuric acid (battery acid is fine) – $2/litre from a battery wholesaler;**
- **Sodium hydroxide – Diggers drain cleaner – $6 Supermarket**
- **Sheet lead – $7/metre – Bunning's Hardware;**
- **12V DC power supply – 8A battery charger – $40 AutoPro;**
- **Anodising dye – free 'samples' from Anodisers (SA) Limited;**
- **Assorted bolts, washers, nuts and 30A hook-up wire; and**
- **Some thin aluminium wire – MIG welding wire is perfect.**

When you are aware of them, and take precautions, the dangers just add to the fun of doing something that most people wouldn't attempt.

Aluminium is a reactive metal, but it doesn't corrode as quickly as most ferrous products. This is because an oxide layer quickly forms on its surface, protecting the base metal underneath. When aluminium oxide forms in air the result is a white powdery layer that can be easily scraped off. Conversely, anodising is an electro-chemical process that forms a structured, crystalline 'surface skin', which is extremely durable. There are several variations of the anodising process; however this tutorial will focus on creating a decorative layer that can be coloured.

What can be anodised? Basically any aluminium can be treated, however this process is most successful with flat-sheet or turned products – so, if you have an aluminium case that you want to change the colour of, this is how to do it!

## Eich En Dangerstein!

**Electrified chemicals aren't toys, kids. Usually. So be very careful when doing the things we've shown you here.**

**You're on your own if you hurt yourself, *Atomic* (& AJB) will not be held responsible for any injury or damage resulting from this tutorial.**

Thermaltake
Cool all Your Life

Thermaltake

# Thermaltake is now in Australia

V2000A

V1000C

V1000+

Thermaltake Xaser

## Xaser Case Series

4 * 5.25" drive bays, 4 * 3.5" drive bays.
Temperature sensor and 4 dials to adjust fan speed.
Large clear optional side panel.
7 built-in cooling fans.
Electro-luminescent front display.

A1806

A1807

A1836

## Xaser Keyboard & Mouse series

Perfect colour / style matching.
Multi-function office keyboard with side wheel.
USB Optical mouse.

## Silent Purepower

420w & 480w high efficiency power supply.
Serial ATA power cable.
Dual ball-bearing fans with automatic speed control.
External PCI slot fan speed controller (1300-4800 RPM).
External 5.25" drive bay fan speed controller (1300-4800 RPM).

Serial ATA Hot Swap

## Volcano 11+

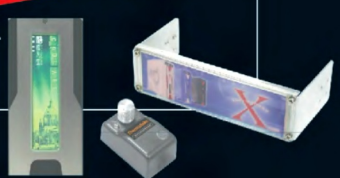
For Athlon XP 3400+.
Full copper Opti-fin technology.
3 in 1 multi featured fan Controller:
Full speed 4800 RPM
Fan speed auto adjustment according to temperature
External PCI slot fan speed controller (1300-4800 RPM)
External 5.25" drive bay fan speed controller (1300-4800 RPM)

## Giant II

Specifically designed for nVidia & Ati VGA card.
Heatpipe technology.
U shape heatsink design for better coverage.

## XView

Special cold cathode panel for 5.25” drive bay.
Several ready-made theme panels available.
DIY feature to create your own designs or styles.
Sound sensitive feature.
Also suitable for Xaser III vertical panel.



## Fireball

Electro-luminescent cold cathode dual panel.
LED case fan.
Triple colour LED transparent Fan.

*THERMALTAKE AUSTRALIA & NEW ZEALAND*
UNIT 1 / 49 HENDERSON ROAD, ROWVILLE VIC 3178 PHONE: 03 9763 1622 FAX: 03 9763 1677
EMAIL: sales@thermaltake.com.au http: www.thermaltake.com.au

## SAFETY RULES

The safety rules go something like this:

- Always connect up the anodising tank before turning on the power supply;
- Safety goggles, rubber gloves and long sleeves are a must;
- No smoking, naked flames or sparks; and
- Plenty of ventilation.

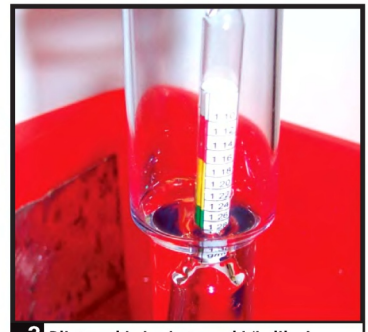
The answer that I came up with was a section of ducting with a 300mm fan, to draw the gas outside. Extreme – but safe.

**1** Prepare the container.

Step one is to prepare the container – turning it into an effective cathode. It is important to note that any metal immersed in the acid should only consist of lead or aluminium. I'm using lead cathodes, to lessen the volume of aluminium sulphate being released into the acid solution. Cut the sheet lead into shape, drill 3/16" holes through the container and lead and bolt them together with the nuts on the outside so they can be used as the power connectors.

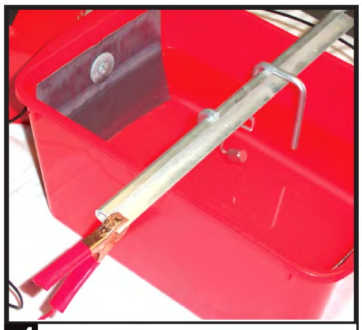
**2** Keep solution under 2/3rds capacity.

The bolt holes should be kept as high as possible to avoid acid seeping out of them, and the volume of the solution should be no more than 2/3rds of the container's capacity. The reason for using two cathodes is to ensure that the anodising process occurs more evenly over the surface of the work-piece . . . a lead-lined tank would be perfect, as long as there was no 'metal-to-metal' contact resulting in short circuits.



**3** Dilute acid slowly to avoid 'boiling'.

The most easily procured form of sulphuric acid is from a battery wholesaler, and will be 35% strength (WW) with a Specific Gravity (SG) of 1.28. This is overkill, as 10% WW / 1.2SG is enough to get a good oxide layer, however I have been using the stronger concentration with good results. If using acid worries you, you can dilute down to a ratio of 2:1 water/acid, but add the acid to the water slowly so the resultant thermal reaction doesn't cause the solution to 'boil' over.



**4** Positive and negative connections.

Hook up the lead plates with a length of 30A wire, using spade connectors under the external nuts. This is the cathode pole, and will be connected to the battery charger's (or suitable 12V DC power supply's) negative lead. The aluminium bar across the tank is the anode pole, and is attached to the positive connection. As mentioned, everything in the tank should either be aluminium or lead, and external connections should be copper to avoid sparks from arcing.

**5** A potentially explosive situation.

When the tank is connected and working correctly, there will be a 'sheet' of hydrogen bubbles generated across the lead sheet by the electrolysis action. With good ventilation this is not a major issue, but if it occurs in a confined space then the build-up of highly flammable hydrogen gas over several hours is an explosive situation. Especially if the explosion then sprays sulphuric acid all over the place. . . so there are a few rules worth following.

**6** Prepare the aluminium for treatment.

With the tank constructed the next step is to prepare the aluminium for treatment. If the components are in clean, non-corroded condition then they can be anodised without any pre-treatment – if not, then a caustic solution of Sodium Hydroxide (Diggers drain cleaner) at about 15% WW can be used as a dip to brighten the metal.

Important note: keep the acid and alkali baths well separated!

# FREE! DOUBLE CD!

## WITH EVERY SUBSCRIPTION TO FHM

FREE DOUBLE CD! VALUED AT $34.95

=$40

**FHM Selections features hits from the hottest artists, such as Basement Jaxx, Ben Harper, Jamiroquai and many, many more! Plus, exclusive behind-the-scenes footage of an *FHM* photo shoot and CD cover model screen savers!**

**15% DISCOUNT FOR 6 MONTHS! OR 20% DISCOUNT FOR 12 MONTHS!**

## To subscribe: Call our credit card hot line 1800 807 913 or e-mail emapsubs@data.com.au

### 1 WHAT TYPE OF SUBSCRIPTION WOULD YOU LIKE?

**Please Tick**

☐ I wish to subscribe to *FHM* for 6 issues for $40 (OZ) or $80 (NZ) by direct debit* from my credit card.

**OR**

**Australia**

☐ 6 months (save 15%) only $40
☐ 12 months (save 20%) only $75

**New Zealand**

☐ 6 months only $80
☐ 12 months only $115

### 2 WHERE WOULD YOU LIKE IT DELIVERED?

☐ **Personal Subscription (for me)**
☐ **Gift Subscription (for someone else)**

☐ Mr ☐ Mrs ☐ Miss ☐ Ms
First Name: _____
Surname: _____
Address: _____
_____
State: _____ Postcode: _____
Daytime Phone: (____) _____
E-mail: _____

### 3 HOW WOULD YOU LIKE TO PAY FOR IT?

**My Payment Details**

☐ I enclose a cheque/money order for $_____ payable to EMAP Subscriptions (NO CASH PLEASE),
OR
☐ Please debit my credit card for $ _____
☐ Bankcard ☐ Mastercard ☐ Visa ☐ Amex
Card No. _ _ _ _ - _ _ _ _ - _ _ _ _ - _ _ _ _
Expiry Date: _ _ - _ _
Cardholder's Name: _____
Signature: _____
Address: _____
_____
State: _____ Postcode: _____

C/FHMATO

Additional P&H applies for overseas orders, please call +612 9879 3175.
Please allow 4-6weeks for delivery of your first issue. Please allow up to 10 weeks for delivery of your free gift. Offer ends 31st October, 2003.

ABOVE OFFER FOR AUSTRALIAN AND NEW ZEALAND RESIDENTS ONLY.

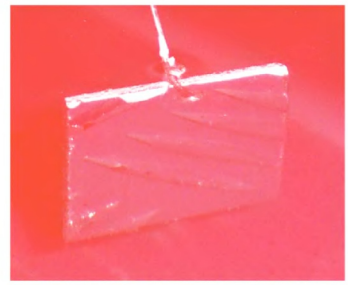
**Send this to us: Mail FHM Subs, Locked Bag 4200, Lane Cove, NSW 2066 Fax: FHM Subs 02 9817 4955**

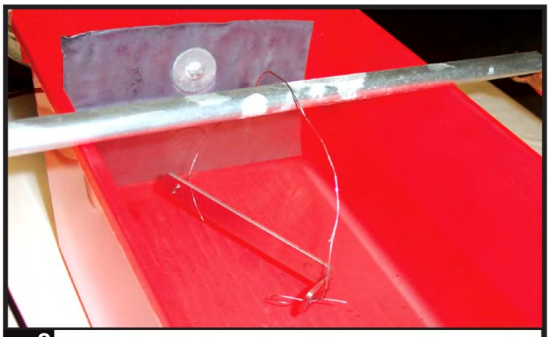
Your information is used by EMAP Australia Pty Ltd for the primary purpose of providing your subscription. You may request access to your information and request that it be corrected by contacting our Privacy Officer: EMAP Privacy Officer, EMAP Australia Pty Ltd, Level 6, 187 Thomas Street, Haymarket, NSW 2000 E-mail: privacyofficer@emap.com.au. Subscriptions cannot be cancelled with this offer.

* Your FHM subscription will be billed for $40 every six issues. Your subscription will continue unless advised by you. You may cancel your subscription at anytime for a refund on all unsent issues.

## KEEP ON MOVIN

7 During anodising it is normal to see small bubbles forming on the work-piece, but if large bubbles form in the one spot there is a chance that they will affect the final finish. It may be necessary to the stir the solution occasionally or, especially in the case of concave shapes, you could use an aquarium air-pump to continually agitate the acid bath. The wire I've used to suspend components is 0.8mm shaved aluminium MIG welding 'rod'. . . ferrous wire is a definite 'not'!





8 It's all in the timing.

9 Developing electrical resistance.

The time it takes to anodise a piece depends on several factors including its size, the amperage of the power supply and the required thickness of the oxide layer – the thicker the layer the more durable the finish and the more dense the final colour. The layer of anodising is measured in microns, and to get a very deep colour, especially 'absolute-black', will require a layer of at least 12 to 15 microns. This is one of the benefits of anodising – you get colour without the surface build-up of paint.

When the oxide crystallises it develops a progressively higher resistance to electric current, as the anodised surface is a layer of aluminium oxide rather than actual metal. Using a 12V 8A power supply, this bracket took just over an hour, whereas a small knob only took 40 minutes. By placing a multi-meter into the circuit you will be able to see the current drop as it occurs. The main point is to ensure a good electrical connection is maintained right throughout the anodising process.

10 Water gets rid of any residual acid.

11 The part takes on a milky-grey colour during anodisation.

Once the part has been anodised, it needs to be thoroughly flushed to remove all residual acid. At this stage of the process the oxide layer is porous, at a molecular level, so soak it for a few minutes in demineralised water so the acid is dispersed from the crystalline structure. Demineralised water is the suggested medium, so that is what I used at first, but when it ran out I found that tap water works just as well.

You will notice that during the electro-chemical process the anodising part will take on a milky-grey appearance as the oxide layer is forming. This look will become even more evident afterwards, when the part has been washed and dried. As mentioned, the anodised layer is very porous at this point, so don't handle it with your bare fingers as this will result in there being 'stains' in the final finish.

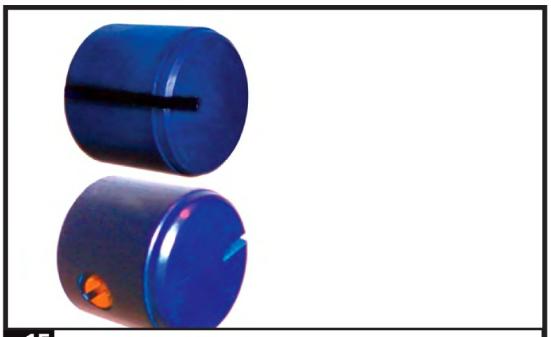
12 When it comes to dyeing: alfoil bad, plastic good.

13 Appearances are deceiving – *Atomic* green turns out gold!

Time to dye! There are several different products that can be used to colour anodised parts –vegetable-based dyes, diluted writing inks, histological dyes and commercial anodising dyes; the latter being used here. The dyes come in powder form and are mixed with demineralised water. To ensure maximum penetration into the crystalline layer they should be kept at a temperature of 80℃. A word of warning, when left overnight they eat through alfoil containers. . . use plastic!

The colour of the solution can differ markedly from the finished product – *Atomic* green actually turns out gold! The solution is a true dye, that is, it changes the colour of the actual metal, and therefore it takes a few minutes for the pigment to penetrate the oxide layer –which at this point has a 'sponge' like porosity. The longer the part is left in the dye the darker the finish, so if you are anodising several parts it is tricky to get an exact match unless you use a stopwatch.

14 Boil or steam the part till it's well-done.

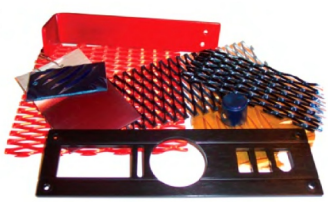


15 Polishing with a cloth reveals a deep lustre.

After you have achieved the colour that you want, the next step is to either boil or steam the part for 20 minutes. If the colour simply washes off then something has gone seriously wrong – such as a lost electrical connection has occurred part way through the anodising process. Boiling converts the oxide into a different crystalline chemical form, sealing the porous layer and permanently trapping the dye underneath beneath the surface of the metal.

After sealing, the part will air-dry to a matt finish that looks fairly ordinary. Fear not, this is just the residual dye left on the surface, and polishing it over with a cloth will reveal the deep lustre that you were hoping for. Additional shine can be achieved by using a soft abrasive – car polish is perfect – to remove any small imperfections and add some 'reflective' properties to the oxide surface. Anodising won't chip, peel or scratch easily, making it one of the most durable finishes you can get.

## CONCLUSION



A few examples of the finish you can expect. The 5.25in faceplate at the bottom is from a Nexus SuperPanel, which only shipped in silver – now it's ready for a black case. The dark maroon is Lian Li sheet metal, and gold checker-plate is no problem at all!

Not too long after you have finished admiring your handiwork, you will realise that you are now left with an ecological issue – getting rid of the toxic chemicals all over your workshop. Disposing of the sodium hydroxide is an easy. . . it's made for cleaning drains, so that's the best way of getting your money's worth. Just make sure to follow the instructions on the bottle. The dyes are non-toxic, so they can be poured down the drain with plenty of water, or into a hole in the garden to disperse over time.

The big issue is the sulphuric acid. It is nasty, toxic and dangerous to have hanging around house, and shouldn't go down the drain either. The answer is to return it to the place of purchase, or dispose of it responsibly. The best method, explained to me by the acid wholesaler, is as follows:

Wear safety equipment, and slowly pour the acid into a container of anhydrous lime, it will turn into a neutralised paste. Let the paste dry off to a 'play dough' consistency, wrap it in newspaper and put it in a garbage bag. It can then be disposed of through the normal refuse system. So, be Planet-friendly.

## Winphony

You can only enter once per competition or you'll be disqualified. You must provide a postal address for prize delivery when you enter (not a PO Box).

### Year of Web hosting at Sniper HQ

There's nothing wrong with Geocities if you don't mind banners and ad pop-ups. If you're looking for something more professional, you can invest in some Web space. Or win some. Yeah, that 2nd choice sounds sweet. Thanks to SniperHQ (www.sniperhq.net) and Mitch Ryan, we have $750 worth of hosting to give away. 10GB of disk space, 100GB of bandwidth, you also get round-the-clock support and unlimited MySQL databases!

**Q: In *The Simpsons*, who was the winner of the Millhouse 500?**

### Activision FPS bonanza

A fortunate soldier, gone back to the Castle of Wolfenstein, shooting Nazis with an M4A1. While we don't usually combine game plots into confusing sentences, we thought it the best way to convey the fact that we have five copies of Soldier of Fortune for Xbox, three of RTCW for PS2, and three copies of RTCW for Xbox to throw at you. They're all thanks to Activision, whose extremely active when it comes to *Atomic* competitions.

**Q: What is the name of the recent, free, multiplayer-only, Return to Castle Wolfenstein?**

### Warcraft 3 prize pack

Orcs are actually a race of reasonably forgiving green mutants whose only interest is to be involved in the winning of stuff. Considering *Atomic* has its fair share of green mutants, and the colour green, it seemed only right to take 'advantage' of their generosity. For our efforts, we scored a bunch of Warcraft 3 figurines, copies of Frozen Throne, Starcraft and Brood War, along with T-shirts galore. Cheers to Vivendi for providing these pleasant gifts.

**Q: Which race in Starcraft has the Zealot as a unit?**

### Cooler Master Musketeer

Quick question – do you drive a car because you like the freedom it provides, or do you just like staring at the gauges. . . as your vehicle plummets over cliffs and cleans up pedestrians?

Well, if you're having trouble soothing your gauge-fetish while your car is at the wreckers, perhaps you need something close to home. Or in your home.

The solution is a Cooler Master Musketeer (as reviewed in *Atomic 32* on *page 66*). Incidentally, we have one of these beauties to give away, thanks to Australian IT.

**Q: What are the names of the three musketeers?**

**EMAIL ENTRIES TO WIN@ATOMICMPC.COM.AU OR POST THEM TO: *ATOMIC*, PO BOX 2286, STRAWBERRY HILLS NSW 2012. PLEASE SEND A SEPARATE ENTRY FOR EACH COMPETITION. PLEASE ENSURE THE COMPETITION NAME IS THE SUBJECT OF THE EMAIL, OR IS DISPLAYED CLEARLY ON THE FRONT OF THE ENVELOPE. THE CLOSING DATE FOR ENTRIES IS 15 OCTOBER 2003. WINNERS WILL BE ANNOUNCED IN *ATOMIC 35*.**

*Atomic 31* winners: Six Rise of the Nations games Q. Name all the funny Marx brothers to have appeared on the silver screen? A. Chico, Harpo, Groucho, Zeppo (Gummo never made it to the big screen). E. Leong, East St Kilda Vic. T. Hordern, North Melbourne Vic. M. Wakefield, Blackburn North Vic. B. Leong Bulleen Vic. M. Clancy Dulwich Hill NSW. B. Jarcevic, Hampton East Vic. Flash MX course Q. Who set off the bra bomb in *The Simpsons*? A. Corey and Nerdlinger. B. Tai, Adelaide SA. Four Jedi Academy figurines Q. What was the name of William Shatner's LP and what songs were on it? A. The Transformed Man. 1) Elegy for the Brave 2) The Tambourine Man 3) It Was a Very Good Year 4) How Insensitive 5) Lucy in the Sky with Diamonds 6) The Transformed Man. A. Periera, Glenmore Park Vic. D. Wheeler, Birkdale Qld. B. Gill, Jamboree Heights Qld. J. Manning, Gorokan NSW.

Terms and Conditions of Entry. 1. The promoter is AJB Publishing Pty Ltd (ACN 083 063 914) of Unit 2-5/44-70 Rosehill Street, Redfern NSW 2016. Promotion period is from 9.00AM on 17.09.03 until 12.00PM on 15.10.03. 2. Entry is open to residents of Australia and New Zealand. Management and employees of AJB Publishing Pty Ltd and their immediate families, and any advertising, marketing or promotional firms associated with this promotion are not eligible to enter. 3. Enter by posting or emailing forms to AJB Publishing Pty Ltd. 4. The draw will be held at the offices of AJB Publishing Pty Ltd at 5.00PM on 15.10.03. Winners will be notified by mail and published in *Atomic 35*. The prizes are not transferable or exchangeable. 6. The judges' decision is final and no correspondence will be entered into. 7. The promoter reserves the right to publish the winner's name and suburb for promotional purposes. 8. All entries will become the property of AJB Publishing Pty Ltd.

# HE'S IN THE ZONE

## Australia's largest gaming zone is open now!

*Visit our brand new location below Hoyts George Street Cinemas, Sydney. It's huge! Battle it out with your mates using the latest gaming beasts.*

*iStarZone's new gaming complex is in a league of its own - where else can you play your favourite games? Upgrade your PCs from the iStarShop, relax in the lounges and cafe or even use the office facilities to do real work!*

## ACTION CENTRAL

- 80 fast PCs for intense battles
- Purpose-built Atomic Arena & AMD Arena for hardcore fragging
- Purpose-built Clan Room
- Special-built Couple Rooms & VIP Rooms for privacy
- Cafe and Lounge areas to chill out after the game
- iStar Technology Shop

ISTARZONE

atomic

iStarZone Pty Ltd, Hoyts Entertainment Complex 505-525 George Street Sydney 2000 **Tel:** (02) 9262 9190 **Web:** www.istarzone.net

COUNTER STRIKE CONDITION ZERO DIABLO WARCRAFT WARCRAFT STARCRAFT

# WIN! A SHUTTLE SN45G

Damn Ugly

Exceptionally Cute

Ugly babies. Despite what your mum might tell you, they do exist. Comparatively, so do ugly computers. Avoid disappointment in the operating theatre (read: garage) and win the cutesy Shuttle SN45G plus carry bag. Just so you can see the difference, we've included some imagery here.

SUB-ATOMIC

It's come to our attention that *Atomic*, in its odd way, has absolutely nothing to do with nuclear reactors, or Uranium-232. While an absence of gamma radiation and unstable isotopes can only be good, we thought it best to get something reactor-ish. Like a Shuttle SN45G mini-barebones system. To make sure you don't get contaminated by the seriously slick nForce2 Ultra400-based motherboard it contains, you'll get a carry bag as well. All you need to do is subscribe or renew this month to have a chance to win it, not to mention you'll be getting almost half off the cover price per issue. Cheers to Shuttle (**www.shuttle.com**) for suppling this *Atomic* payload.

## PRIZE FOR CURRENT SUBSCRIBERS (THE DO-NOTHING SUPER-SUB BONUS PREZZIE)

**Raven Shield: Athena Sword**

According to the Internet, there are heaps of people on our little planet. Try not to get excited; this interesting fact is only one of many to be found on the World Wide Web. So, as you're taking deep breaths and contemplating the 'many people' theory, we though it best to introduce you to the awesome current subscribers competition we have going.

Yes, if you're currently subscribed, you could win one of five Raven Shield games, including the soon to be released expansion Athena Sword. And all you have to do is relax and contemplate; just wait and see if you're picked and we'll send your prize to you!

Word up to Ubisoft for supporting this great cause.

## ATOMIC 31 WINNERS

>> Soggy Polymer box – P Fitzgerald, Belgrave VIC

>> Xiro MP3 – A Jefferson, Valentine NSW

Terms and Conditions of Entry. 1. The promoter is AJB Publishing Pty Ltd (ACN 083 063 914) of Unit 2-5/44-70 Rosehill Street, Redfern NSW 2016. Promotion period is from 9.00am on 17.09.03 until 12.00pm on 15.10.03. 2. Entry is open to residents of Australia and New Zealand. Management and employees of AJB Publishing Pty Ltd and their immediate families, and any advertising, marketing or promotional firms associated with this promotion are not eligible to enter. 3. Enter by posting or emailing forms to AJB Publishing Pty Ltd. 4. The draw will be held at the offices of AJB Publishing Pty Ltd at 5.00pm on 15.10.03. Winners will be notified by mail and published in *Atomic* 35. 5. The prizes are not transferable or exchangeable and cannot be taken as cash. 6. The judges' decision is final and no correspondence will be entered into. 7. The promoter reserves the right to publish the winner's name and suburb for promotional purposes. 8. All entries will become the property of AJB Publishing Pty Ltd.

DO NOT TO BE PHOTOCOPIED

# atomic
MAXIMUM POWER COMPUTING
www.atomicmpc.com.au

COMPULSORY GAME OF SKILL FOR COMPETITION:

What's the best mag in the whole wide world? AT_MIC

### WHY YES! I WOULD LOVE TO SUBSCRIBE TO *ATOMIC MAGAZINE*.

**Australia**
☐ 1 year (12 issues) $59
☐ 2 years (24 issues) $95

**New Zealand**
☐ 1 year (12 issues) NZ$71
☐ 2 years (24 issues)NZ$115

### PAYMENT DETAILS

✔ Please tick method of payment
☐ Cheque/Money order
Make payable to *Atomic Magazine* and post with this coupon to:
**Australia** – *Atomic Subscriptions Department*, Reply Paid 479, North Sydney, NSW 2059
or fax (credit card only) to (02) 9492 7310.
**NZ** – Mercury Solutions, PO Box 24 013, Royal Oak, Auckland.
or fax (credit card only) to (09) 625 3006.
• Please allow up to 4–6 weeks for your first issue of *Atomic*.
☐ Bankcard ☐ MasterCard ☐ Visa ☐ AMEX
Expiry Date: _ _ / _ _ Card No: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Cardholder's name:

Signature: Date:
☐ Please tick here if you do not wish to receive future promotional information

### PERSONAL DETAILS

Email:
Mr/Mrs/Miss/Ms
Surname:
First name:
Company name:
Position:
Address:
Suburb: State: Postcode:
Country:
Phone: ( ) Fax: ( )

### I WOULD LIKE TO SEND A GIFT SUBSCRIPTION TO:

Mr/Mrs/Miss/Ms
Surname:
First name:
Company name:
Position:
Address:
Suburb: State: Postcode:
Country:
Phone: ( ) Fax: ( )
Please send my gift subscription to ☐ me ☐ recipient

CI/A33

# Totally Evian

## John Simpson goes from the subliminal to the ridiculous

Subliminal advertising. Now there's an interesting topic. On the *Simpson list of things worth knowing about* it comes just before *what does Evian mean?*, and after *why do we have earlobes?* So it's probably no surprise that, until recently, I knew nothing about it.

Subliminal advertising first burst its way into popular culture back in the 1950s, when a marketing guru rented a movie theatre and flashed the words 'eat popcorn' and 'drink coke' between frames of the movie. Reportedly, sales of drinks and popcorn rose dramatically, even though most people there were either snogging in the back row or trying to avoid conscription.

Lots of studies were done on uni students, many involving rubber gloves and pointy objects. After having a good chuckle, the more serious researchers decided to look into subliminal messages, using whatever students they had left. They found that people could actually understand messages faster than their eyes could read them. More interestingly, those messages could often induce subjects to behave in peculiar ways. Get them to watch a movie and flash messages at them to act like chickens – suddenly, the clucking begins. Tell them their heads have just been cut off and watch them run around and bump into things. Like I said, serious research.

It seems humans are subconsciously aware of a lot of stuff they don't consciously see. A scary thought, considering we're exposed to so much screen content these days. TV, computer, PalmPilot, fridge –you name it, there's always some sort of screen in our face. Thankfully, subliminal advertising was banned in the 70s, although this hasn't stopped some imaginative and highly suspect examples since then. Try these:

In George W Bush's presidential campaign, TV ads showed the other party with the word 'bureaucrats' plastered over the top. Then, as the word fades, the last four letters linger a little longer. Apparently, the idea was to turn voters off Al Gore's medical plan, because rats are yucky. Hmmm, I see...

In the Disney movie *The Lion King*, reportedly the word 'sex' flashes twice on the screen. There's also a scene in *The Little Mermaid* where a man performing a wedding ceremony gets an erection. I'm not too sure what this is supposed to suggest (that weddings are exciting?) but it makes me suspect that drawing thousands of mermaid pictures eventually gets a tad dull.

And recently in Yachiyo Japan, a polling booth played a song used by the ruling party as its campaign song. Japanese officials were apologetic, offering to fall on their swords or act as Sumo benchseats. The Prime Minister said it was just a 'really cool song' and, with the cost of the band's hairdos, 'these guys need all the airplay they can get'.

My biggest concern is the one advertisement that I sit in front of everyday. The one that helps put bread on my table and a range of toppings in my pantry. Yep, you guessed it – the Windows logo. I've spent an inordinate amount of time staring at that startup screen, and I think I've stumbled on something quite shocking.

It knows my face.

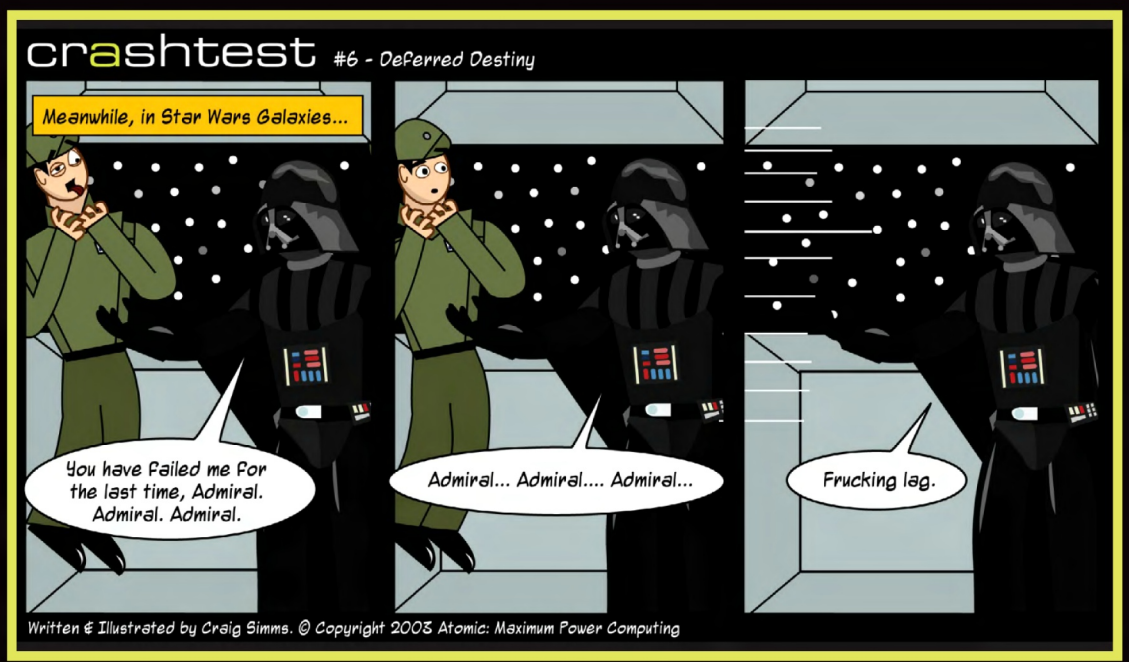
I can't be sure, but I think that just before it does its startup sequence, I see my own face on the screen. It looks almost exactly like me (although not as handsome) with a look bordering between fear and constipation. It's in there, I'm sure of it.

This means one of two things. Either Microsoft knows that I've altered my registry and deleted Messenger, or that one of their satellites has somehow managed to find a way through my Alfoil headpiece. Or maybe I need an anti-glare screen.

In any event, subliminal advertising is real, and it may be more widespread than you know. Some people [buy] even think [more] it could be used [Atomic] in magazines [merchandise]. So the next time you watch a Disney movie and start feeling a bit frisky, you too may have been manipulated. So to speak.

Oh, BTW, we have earlobes to hang stuff off. And Evian is a city in France and doesn't really mean anything – although backwards it spells 'naive'.

Subliminal stuff...



# TARGET LOCKED.....

GAMING TECHNOLOGY
TOTAL IMMERSION
UNRIVALLED DETAIL
PRECISION ACCURACY
INSANE SPEEDS
THE ABILITY TO DODGE
ROCKETS:

# OWNAGE

## ATI RADEON 9800PRO

## ATI RADEON 9600PRO

ATILABS Australia
http://www.atilabs.com
Warehouse:
119C North Rd
East Deniston
NSW
TEL: 02-93450033

Dealer and reseller enquiries welcome

DFi LANPARTY NFII ULTRA
DFi LANPARTY 875PRO
Nanotherm PCM+/EXP
ATi Radeon 9600Pro 128MB*
ATi Radeon 9600Pro 128MB VIVO*
ATi Radeon 9800 128MB*
ATi Radeon 9600Pro Lite 256MB*
ATi Radeon 9800Pro 128MB*
ATi Radeon 9800Pro DDR II 256MB*
OCZ PC4000 512MB (2x256MB) DDR
OCZ PC3700 512MB (2x256MB) DDR

For more information about DFi Lanparty please visit: www.lanparty.com.tw
For more information about ATi Radeon based cards visit: www.ati.com
For more information about OCZ ram please visit: www.ocztechnology.com

Gamevision
www.gamevision.com.au

EYO
www.eyo.com.au
02 9822 2550

Umart
230 Liverpool Rd Enfield NSW
www.umart.com.au

SMC
www.sydneymetrocomputers.com.au

Prices and specifications subject to change without notice. DFi, ATi and OCZ logos are registered trademarks of their respective companies in the United States and other countries. Pictures only for demonstration purposes. Errors and omissions excepted.

SPEED LIMIT 500 MHZ

CORSAIR™

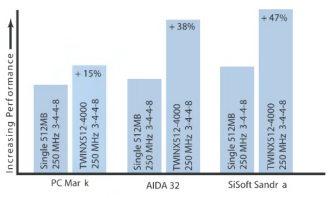
*...but who follows the speed limit anyway?*

# NEW CORSAIR TWINX-4000 DDR

- Memory bus speed: 500 MHz (PC4000 - fastest DDR).
- Tested in dual-channel configuration and packaged in pairs immediately following system test.
- Specifically designed for motherboards using chipsets with dual memory channels.
- Tested at JEDEC-standard latency settings (3-4-4-8) for optimal memory bus speed (for optimum Canterwood performance).
- Plug-n-Frag™ - Boots automatically using latency values optimised for bus speed.
- 6 layer controlled-impedence PCBs with 30 micro-inches of gold on the pins.
- The world's fastest memory, according to countless independent reviews.
- Ultra-sleek, distinctive aluminium heat spreaders, ideal for overclockers.
- Lifetime Warranty.

***Single Channel vs. Dual Channel***

(Performance on Asus P4C800 using common benchmarks)



**www.corsairmemory.com**

ALTECH Computers

Australian Premium Distributor:

Sydney:
9 Rachael Close,
Silverwater, NSW 2128
Tel: (02) 9735 5655
Fax (02) 9735 5656
sales@altech.com.au
www.altech.com.au

Brisbane:
64 Hope Street,
South Brisbane, QLD 4101
Tel: (07) 3017 2000
Fax (07) 3017 2020
info@altech.com.au
www.altech.com.au

**Sub-distributors:**
SA Leader Computer Systems (08) 8112 6000 www.leadersystems.com.au

Premium Retailers:

| | | | |
|---|---|---|---|
| NSW | UMart International | (02) 9745 0877 | www.umart.net |
| | Emagen | 1300 880 070 | www.emagen.com.au |
| | AusPCMarket | | www.auspcmarket.com.au |
| | On-Line Marketing | (02) 9439 0033 | www.computermarket.com.au |
| | Cougar Computers | (02) 6242 2777 | www.cougar.com.au |
| VIC | Scorpion Technology | 1800 726 770 | www.scorptec.com.au |
| | CPL | (03) 8542 8688 | www.cpl.net.au |
| QLD | GameDude | (07) 3387 1500 | www.gamedude.com.au |
| | Masterlink Computers | (07) 4125 5077 | www.mlink.com.au |
| WA | Adrenalin Computers | (08) 8410 0777 | www.adrenalin.net.au |

18IT Antec ASUS X-MICRO SOLTEK SONY TYAN CORSAIR Microsoft SAMSUNG AMD ZALMAN

SEALED SECTION

# Defender of the crown

**AMD's Athlon XP earned a special place in the hearts of many enthusiasts. John Gillooly sees how the long-time-coming Athlon 64 FX stacks up to the Pentium 4.**

Coordinating the launch of the Athlon 64 with Computex rams home just how long we have been waiting for AMD's first real chance to become an innovator and not just a maker of very good clones. It was mid last year that AMD pre-emptively started waving the 64-bit banner, at the June 2002 Computex. Then this year's Computex, originally scheduled for June, was delayed to September due to the SARS crisis. So, after waiting almost a year and a half, AMD has finally delivered on its Athlon 64 promise.

The Athlon 64 brings 64-bit computing to the masses, not just those with enough cash to fork out for a high end server. But it is not the 64-bit performance that excites at the moment, for the battle is still firmly lodged in the 32-bit arena, and AMD has to first show it can keep up with Intel and its Pentium 4 on this field before driving forward into the 64-bit arena.

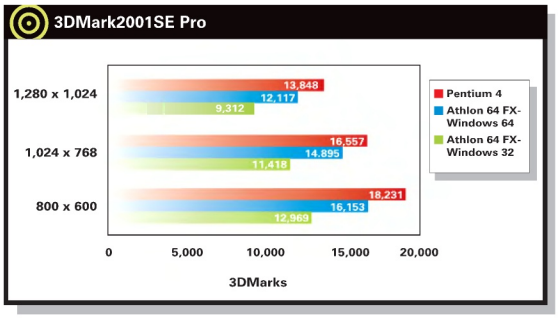
Unfortunately, hopes of a synchronised Windows 64-bit launch have been dashed. In fact, the early version supplied to us for testing was actually called Windows XP 2004 64-bit edition on the documentation, so our money is on a launch sometime early next year, once the customary Release Candidate shenanigans pass.

The 32-bit arena has changed a lot since AMD first started talking about the Athlon 64, then codenamed ClawHammer. Intel has finally found widespread acceptability for the Pentium 4, which is a combination of the increased performance of its Northwood core, and Intel finally giving RAMBUS, and its much hated RDRAM, the flick. The top end Pentium 4 is also clocked much higher than the Athlon 64, which never stopped the Athlon XP from keeping pace, but this is a whole new architecture.

It is probably pertinent to remember the launch of the Pentium 4 and how Intel had a tough time pushing the benefits of an architecture that performed worse than its predecessor on a clock for clock basis. One of the keystones of the argument was the importance of compiling for its SSE2 series of multimedia extensions. Well, this advantage is now effectively nullified, as AMD has included SSE2 functionality into the Athlon 64. What better way to cash in on the effort made by Intel to get SSE2 accepted and used by developers? Of course, Intel has the mysteriously named PNI (Prescott New Instructions) built into its next Prescott core, which will probably see the SIMD battle begin anew.

This is a big moment for the desktop PC and for the gamers and performance nuts of the world. AMD has ridden to success on the coattails of the overclocking and gaming crowd, and it is rewarding us with a new 'premium' model of Athlon 64, the Athlon 64 FX. It makes you wonder whether this is a sign of a closer relationship between AMD and NVIDIA than first thought, or if it's a case of FX being the XP

of 2003. This CPU is essentially an Opteron for the common man, with a very cool 1MB of L2 cache and a dual channel DDR memory controller. It also means that the Athlon 64 FX currently uses the same socket as the Opteron – Socket 940. Regular Athlon 64 chips will use the smaller Socket 754 and eventually the Athlon 64 FX will lose a pin and




become a Socket 939 CPU.

No, you aren't the only nervous one reading that. Remember the Socket 423 Pentium 4's six-month reign before shifting to Socket 478? Or the Slot A 700MHz Thunderbird Athlon CPU that was rapidly usurped by the Socket A models?

Socket changes are damn annoying and one can only hope and beg a little that AMD will sort out the sockets quickly, and not render the Athlon 64 FX impotent because it will only work on poorly featured workstation boards, while the less powerful Athlon 64 gets all the attention with the mainstream Socket 754 boards. One of the cornerstones of Athlon's success, and its marketing campaign, was the long term standardisation on Socket A for desktop and server offerings alike.

PR ratings as we knew them are now gone, replaced by a model numbering scheme similar to that used for the Opteron. The CPU we have tested is an Athlon 64 FX-51, which runs at 2.2GHz and a 200MHz front side bus pumped up to 400MHz.

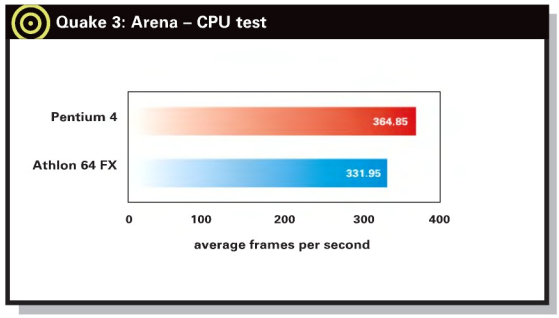
Our testing has focused on 32-bit performance, in part because even though 64-bit windows exist, driver maturity and the lack of native 64-bit desktop benchmarks makes 64-bit performance evaluation still somewhat of an effort in soothsaying. We have tested the Athlon FX-51 using an ASUS SK8N nForce3 Professional 150 motherboard with two 512MB sticks of registered ECC DDR400 RAM.

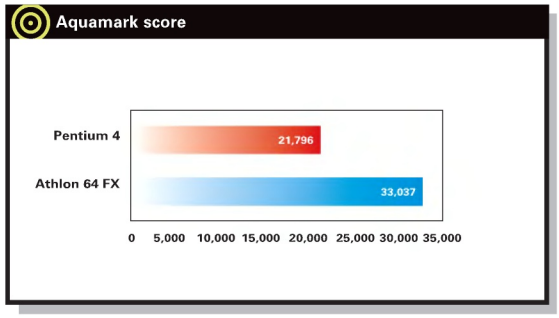
This was not our ideal testing choice, as it is unlikely that registered ECC memory will be needed for a home PC setup, and it harkens to the legacy of the board being designed to power Opteron workstations. The lack of a Socket 754 CPU meant we have been unable to use the Gigabyte K8NNXP or MSI K8T Neo consumer boards we had planned to use. However, the memory is DDR400 at heart so it still provides enough bandwidth to the CPU.

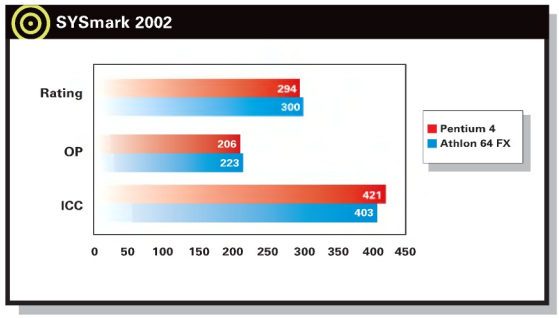
This has been compared with a 3GHz 800MHz FSB Pentium 4 in an Intel 875PBZ motherboard with 1GB dual channel DDR400.

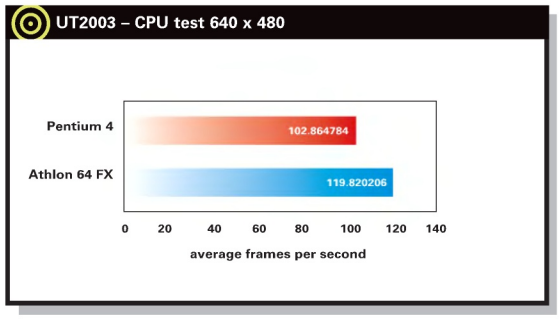
For both testbenches we used an ABIT Siluro FX5900 OTES graphics card and an ATA100 hard drive.

Anyone who watches the benchmarking scene closely knows that SYSmark2002 is Intel's bitch. Stepping back from any debate about the reasoning, the simple fact is that the Pentium 4 beats the Athlon XP almost universally in SYSmark2002. So what better benchmark to kick off with, and what better benchmark to get surprising results in. It



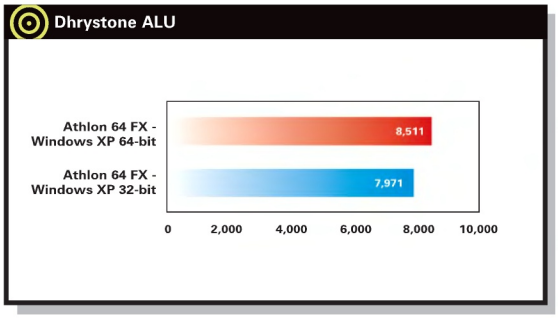



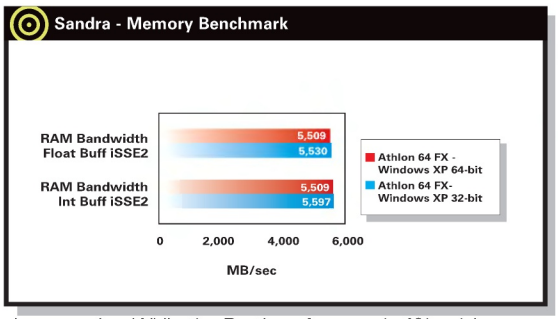




may be by the sort of margin that can only be called a moral victory, but the Athlon 64 FX-51 manages to sneak past the Pentium 4, thanks to a higher office productivity result. The Pentium 4 still wins Internet Content creation by a comfortable margin, but the Intel advantage seems to be disappearing in SYSmark2002.

Quake 3 is another benchmark loved by the Pentium 4, and while the margin is again quite small, the Athlon 64 FX-51 does fall behind the P4 by a noticeable amount. This benchmark is very sensitive to memory bandwidth and it appears to show a theoretical advantage over the Athlon 64 FXs memory controller.

Using the newer Unreal Tournament 2003 with [H]ardocp's CPU benchmark we found a reversal of the



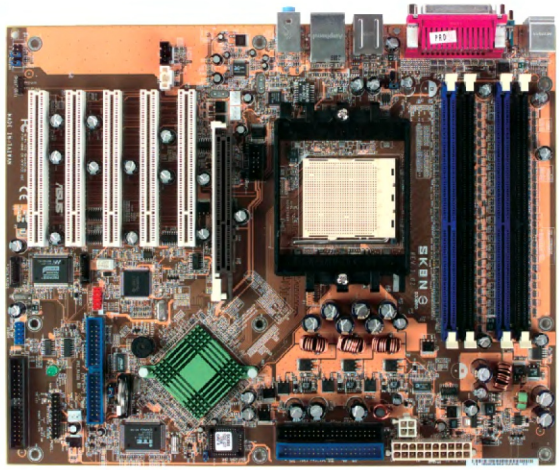




above results. While the Pentium 4 was only 1% quicker than the Athlon 64 FX in Quake 3, the Athlon 64 FX was 16% faster in UT2003. With UT2003 likely to be the first game with native 64-bit support we eagerly wait to see how much more this gap can be pushed.

**ABOVE: Both Socket 940 and Socket 754 CPUs use a common heatsink mounting mechanism.**

AMD's PR blurb about the Athlon 64 FX specifically mentions the gamers of the world, so we added to our system tests with some gaming ones. Here the picture gets messy, with two significant wins seen by each system. In trusty old 3DMark2001SE the Athlon 64 FX performs well below expectations at every resolution, while in the newfangled Aquamark 3 the complete opposite is seen.

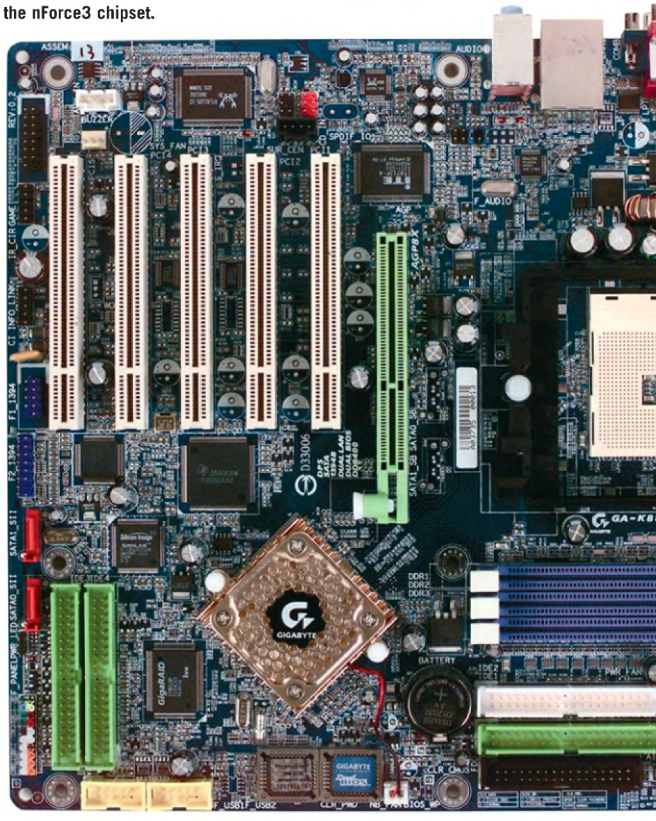
We suspect this is driver related and may in fact stem back to something we have been hearing from Taiwan – that at the moment there is an undisclosed bug in nForce3 holding manufacturers back from shipping them. Given the close performance of the systems in the other benchmarks,

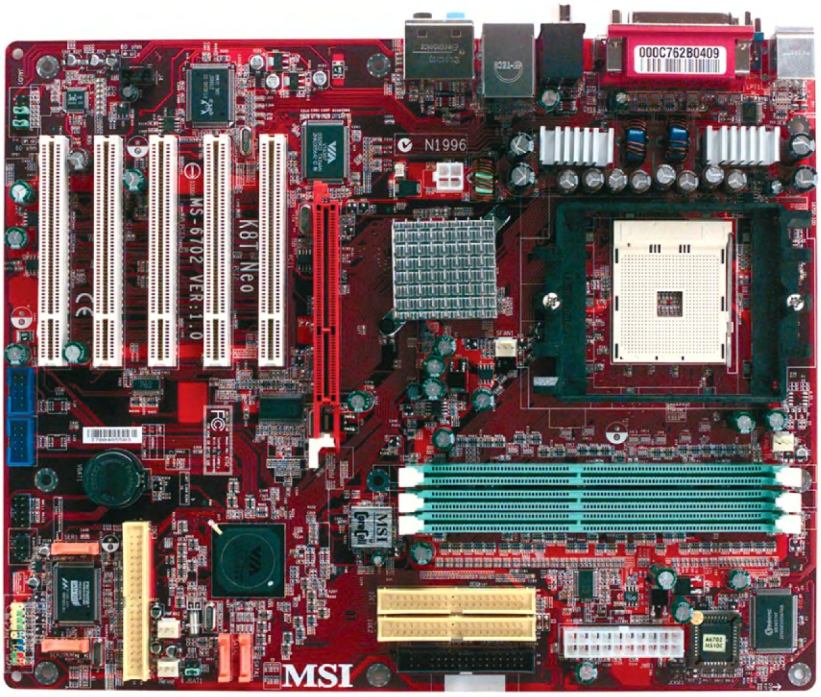


and the identical configurations, these results are more likely down to driver or BIOS maturity than actual gains. But we think it is driver related for the most part, as 3DMark2001SE performance under 32-bit emulation in Windows XP 2004 64-bit is significantly higher and much closer to the Pentium 4.

A better picture of gaming performance will emerge when we can get our hands on Socket 754 Athlon as well as enthusiast focused Socket 940 motherboards. Once the inevitable bugs and drivers issues get ironed out (given the lead time on the launch this should be sooner rather than

**BELOW: Gigabyte's K8NNXP Socket 754 motherboard which uses the nForce3 chipset.**






**ABOVE: MSI's K8T Neo motherboard uses VIA's K8T800 chipset for to run Socket 754 CPUs. Note the visibly different socket design when compared to ASUS' socket 940 SK8N motherboard.**

the Athlon 64 and Athlon 64 FX to see how it is faring after the launch. Bear in mind that this is very much a performance preview and even as you read this some of the issues we experienced will be getting ironed out.

Keeping in mind the obvious bugs that affected testing, the Athlon 64 FX is a tasty CPU for those after performance, performance, performance.

AMD has created a robust, competitive CPU for a new generation of PCs. We wait to see what Intel can pull out of its hat with Prescott. But AMD has certainly proven that megahertz mean sweet fuck all when you look at performance.

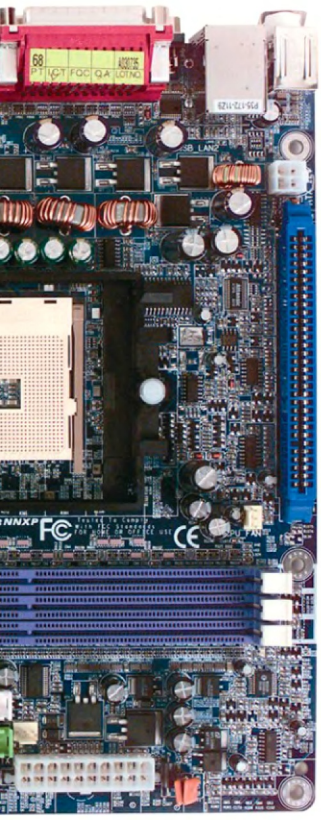
The Athlon 64 FX-51 is the fastest of AMD's selection but it clocks in at only 2.2GHz against the top end 3.2GHz Pentium 4. The next year will show if AMD has nailed the fabrication issues that delayed the launch of the Athlon 64 for so long, if it can deliver competitive speed upgrades and more importantly large volumes of reasonably priced CPUs.

It's still hard to believe AMD has finally given us enthusiasts what it promised oh so long ago – a brave new upgrade path that will provide for the early adopters a slow improvement in performance, but still enough to keep things quite interesting.

Unlike the Pentium 4 and its clock for clock slower NetBurst architecture, the Athlon 64 delivers enough power now, and in the future, who knows?

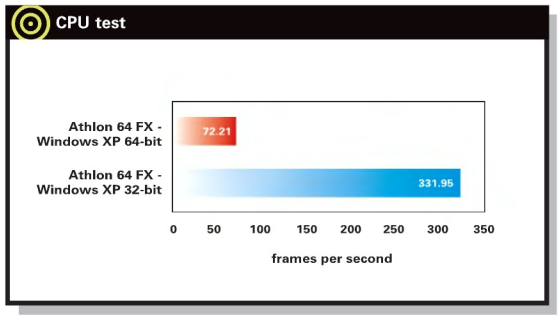
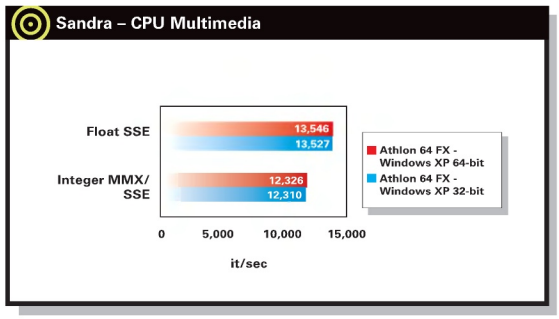
later) we will revisit the Athlon 64's gaming credentials.

No matter who decrees that a 64-bit OS will not improve 32-bit performance there is one certainty. Any true Athlon 64 owning computer nut will grab themselves a copy of Windows XP 2004 64-bit as soon as it becomes available. So we have taken the chance to run some benchmarks using the prerelease operating system.



Unfortunately there was no 64-bit version of DirectX 9.0 available at the time of testing, so we had to restrict our gaming tests to 3DMark2001SE, if only to clarify the bafflingly low scores under Windows XP Pro. We also ran Sandra for some theoretical comparisons and Quake 3: Arena to get a feel for the system performance (SYSmark2002 refused to run).

Woeful Quake 3 arena scores, even when using settings that won't touch the sides of the FX 5900's pipes, point to it being a driver issue at fault. In this case it seems OpenGL performance still needs some work.

It still doesn't explain the 3DMark2001SE gulf, especially considering performance jumped markedly under 64-bit. Only time, hardware revisions, BIOS updates and new drivers will clarify.

In *Atomic 34* we will revisit